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LIGHT ✦ HEAT ✦ POWER ✦ BYE-PRODUCTS

[Founded in 1849 as the "Journal of Gas Lighting."]

VOL. CLXXI. No. 3250.] LONDON, AUGUST 26, 1925. [77TH YEAR. PRICE 1s.

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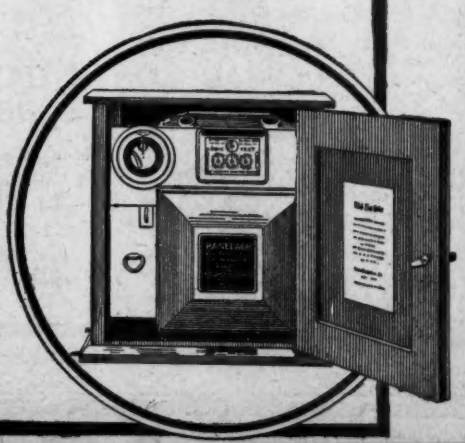

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EDITORIAL NOTES.

The Coal Investigation.

EVERYTHING is in order now for the Royal Commission, when constituted, to set about their critical and important task of inquiring into the economic conditions of the coal industry, with the view of ascertaining how they may be improved and adjustments to circumstances be effected. The only, but important, thing of which we have yet no knowledge is the personnel of the Commission. The task of getting the right, competent, and yet disinterested men to undertake this work is not a light one. An investigation of the kind will certainly be long, exacting, and an enormous responsibility to the participants; and this means the absorption of much time, and a concentration of interest, which will allow the Commissioners for a period little opportunity to devote to their own interests. However, to the agreement for the nine months' armistice or truce, endorsement was given last Wednesday at a meeting in London of the men's delegates from all the coal-fields. So far that is satisfactory, although we cannot say we are enamoured of the terms "armistice" and "truce" which have obtained currency in connection with this matter. They seem to breathe war, or a suspension of war, instead of the spirit of a common intention to search out and define the ways to betterment, with the view, not of performing miracles, but of gradually restoring the industry to a position which shall be of benefit to all concerned. The terms of reference to which agreement has been given are set-out in few words; but they are such that the scope they supply is unlimited other than by relevancy. The terms are: "To inquire into, and report upon, the economic position of the coal industry and the conditions affecting it, and to make any recommendations for the improvement thereof." Simplicity and comprehensiveness are combined in them; and it was only the large covering power found in them that satisfied the Miners' Federation that they need not ask for the specific citing of matters that they require should be discussed before the Commission. Naturally the Commission will expect suggestions for improvement from those who will be giving evidence; and, also naturally, they will desire the pros and cons laid before them for consideration, in order that, whatever may be the ultimate recommendations, they will be the result of a serious weighing not only of the advanced suggestions, but of ideas which may be formed by the Commissioners themselves from the hearing of the evidence. The terms give freedom to the Commissioners; and they are also so elastic that the difficulty will be to draw a line of demarcation between what is relevant and what is otherwise—especially having in view the importance of the Commission maintaining the impartiality which it has been the express desire of the Prime Minister to obtain in the members. There is one thing for which there should be strong appeal. It is that during the investigation it should be a matter of honour on the part of every responsible official of the Miners' Federation and other trade unions not to attempt to prejudice the proceedings in the minds of the men by inflammatory speeches, suggestions as to the senselessness of the whole investigation, and predictions that nothing good can come out of it. That sort of thing is liable to warp the judgment of the men before knowing the actual outcome. That is not fair play; it is not British. It is, however, significant that that is the feeling a few are seeking to engender, and unfortunately it is easier to do that than to implant wisdom. Although so much has been generously done with the view of achieving something really good for the coal industry, it has been accompanied by despicable efforts to direct the minds of the miners to strife and revolution. The men who operate thus are the worst enemies of the miners, of all the workers in the country, and of the nation at large. Their common-sense is imperceptible; their want of patriotism is too plain to be ignored.

Preparations for the Winter.

THE annual holiday season is now well advanced. Members of staffs are beginning to return to their work, and those fortunate ones who have yet to enjoy their holidays are gradually being released for them, and before long will be once more pursuing their service to the undertaking and the public. In progressive gas undertakings, plans are already laid for great activity in the sales and service department. Most undertakings have had, or are having, their manufacturing plants put into good condition for the winter season, and in many places extensions have had to be made. The flights of consumption during recent years have narrowed considerably the surplus capacity which works have been wont to carry for emergencies and sudden demands. These flights are getting larger; and there are now more unruly peaks to deal with in the output curves than was the case even in the immediate pre-war days. Our climate has always been vagarious; if our recollection serves us faithfully, it is relatively with some years ago rather more so in these times. There is now a distinctly greater association between the changes of atmospheric conditions and gas demand than there was formerly; but we do not blame those changes for imposing upon gas undertakings the additional responsibility of being prepared to meet them. If we must put the blame somewhere, it must be upon the popularity of our chief commodity, on account of its ability readily to make more tolerable the conditions of the most uncongenial days of the year, and to add to the comforts and conveniences of life, and by extraordinarily simple means. But all this indicates that the old standards of safety in manufacturing capacity have been rendered obsolete; and new ones have had to be applied for emergency purposes, and to meet the accessions of demand which come without warning. At one time of day, these flights of demand would have caused something akin to consternation; but we have gradually grown with, and have become inured to, them. Developments have been made which have enabled responsible chiefs of gas undertakings to regard the flights without fear. In this regard, auxiliary water gas or complete gasification plants and good holder capacity subscribe valuable service, and oil is available to meet the thermal obligation. Large oscillations in consumption are now accepted as inseparable from the gas business; and we cannot develop apart from them. But a good policy is to create as considerable a diversity in demand as possible, as diversity has a levelling-up influence—and particularly demand not subject to atmospherical influences.

However, with the plant ready for anything that may

befall in the coming winter, the duty of the public service department is to do its utmost to operate again to reduce the greater margin of capacity provided in the works. The engineer will not complain. It is what he wants. The expansion of demand—especially through the existing services—produces economies in several ways; and it also gives better opportunities for plant modernization. In the public service department, this period of the year is the one when there should be the greatest possible activity in working for the improvement or renewal of lighting installations, and in getting orders for the immediate installation of gas-fires. The hot water business too, is one that should be especially cultivated—not overlooking the great advantage to the price of gas that there is in developing the use of the domestic coke-boiler in suitable dwelling-houses and other establishments, both for general heating and hot water provision. Manufacturers, too, prefer to introduce new plant during the light days rather than during the dark ones. In all these directions work should be pressed forward—now. It should be noted that the Electric Lamp Manufacturers' Association have on hand a big lighting campaign for the coming autumn. Effective countering work must be done by gas undertakings. For the electric lighting campaign—it is especially designed for shopkeepers—a comprehensive programme has been arranged, and preparations are well in hand for carrying it out. The main details will be found in the opening paragraph of our "Electricity Supply Memoranda" this week. Every gas undertaking should take full advantage of the knowledge, although those who have adopted the policy of efficiency maintenance by inspection, regulation, and cleaning are in the safest of positions for meeting the more strenuous competition for the lighting load. This for electricity is not increasing at the rate desired. They want to sell more and more of the heavily priced units, as this augments the ability to sell at lower prices for other purposes. The consummation of the desire has to be resisted by every means available to the gas industry, including not only efficiency maintenance of apparatus, but the application of the newest types of lamps, and more scientific installation than has obtained in the past.

It is observed that in some gas supply areas the gas-fire inspectors have already started on their annual survey and useful efficiency-restoration work; and attractive terms have been advertised for fitting-up new gas-fires before the rush of the winter work sets in. The "B.C.G.A." have been supplementing these efforts in their general propaganda. People are prone to leave the fulfilment of their intentions in such matters to the impelling persuasions of actual cold weather, instead of being prepared beforehand. But special inducements will bring many up to the scratch; and every householder who can by such means be prevailed upon to have new gas-fire requirements attended to betimes, helps to lighten the pressure that of late years has always set in with the coming of the winter. Inducements of the kind constitute a good policy. This applies also to the installation of gas or coke heated apparatus for hot water supply and room heating. More hot water is required in the winter than in the summer; and more heat is needed to raise the temperature of a given quantity of water. All this is excellent seasonal business; and it helps to level-out the load curve on the fitters' department. Work that anticipates the seasons adds to the general efficiency, and introduces a greater elasticity into the operations, of an undertaking. We are looking forward to a winter's good gas trading; and it is hoped that coke will shape well in it, and so give much-wanted relief to the unsightly accumulations of such material.

The Weakening Case for State Help for Electricity.

THINGS are not shaping well in connection with the Government proposals for curing the ills or remedying the deficiencies from which the electricity industry is supposed to be suffering, and for promoting conditions, through that industry, which (also hypothetically) will restore lost employment, while leaving far more vital contributory questions to take care of themselves. The fact of the matter is, the Government have been seriously misled; and though we believe the conviction has partly dawned upon them that this is so, they are reluctant to own up to the truth. One of the strong elements in the case for their scheme was that concentration of electricity generation would be facilitated, and there would result an economy in the consumption of fuel per unit. The recent returns issued by the Electricity Commissioners show in incontrovertible terms that, without the aid of the Government, the average consumption of fuel per unit generated has declined in the past twelve months. Therefore things are going well in that direction, though fuel costs are only a fraction of the total of delivering electricity to the consumers' terminals. The President of the Institution of Electrical Engineers has also told the country that the transmission of electricity from generating plants at the collieries would be more costly than sending the coal from the collieries for generating purposes in the centres where the current is required. So much for the economies. As to State-aid, in the last-issued financial statements of the electricity companies and of the municipal authorities, a consistent improvement is shown in the position; and the industry altogether is doing remarkably well. An article in the "Evening Standard" last Saturday gave information as to how the electrical manufacturing trade is making good progress. We read: "The manufacturers are busy, and are doing "well. Enterprise and initiative have meant a continuous "and increasing development, and the British firms are "doing far more than merely holding their own . . . "This means that the British electrical industry has a "far greater financial margin for the all-important work "of research."

Then the Government, though they have learnt something of how repugnant to the taxpayers is the policy of State subsidies to industry, had little idea that they would stir-up such an amount of indignation as they have done by their suggestion to borrow for electrical purposes seriously in amount, and indefinitely as to time, from the surplus of the Road Fund, which was raised by the taxation of motorists solely for the purpose of improving roadways and enlarging their accommodation for the new and growing traffic. Possibly to counter the indignation, the information has been published that the Ministry of Transport has allocated £6,500,000 from the Road Fund for the construction and improvement of trunk roads as a measure of unemployment relief during the winter. This will not do. People are not going to be appeased in this fashion; the raid on the surplus is still a proposal.

The postponement of the promotion of the electricity scheme to the next session of Parliament must not be permitted to allow a lull in the opposition. The interval should be usefully occupied. The Government have gone so far that, though they may somewhat modify their purposes, there is no indication of abandonment, with the view of letting electricity do as every other industry in the country has done—develop by its own initiative and effort. Not a single point in the strong case constructed and promulgated by Mr. Milne Watson in opposition to the electricity proposals of the Government has yet been answered. The reason for this is that every element in that case was thoroughly examined and tested before being put forward; and there is not a single one which can be overthrown.

The British Association and Practical Work.

A MULTITUDE of subjects will, as usual, engage the members of the British Association for the Advancement of Science at their meeting at Southampton, which opens to-day. According to the foreshadowings of the programme, much that is abstruse, and not of general interest, will court consideration. We should like to see the balance turned the other way. Towards the end of the programme, it is noticed that there are to be discussions on the problems of technical education, and the conditions of success. In scientific circles, there is a feeling that our higher scholastic establishments and industries in which technical education is necessary for the achievement of the highest efficiencies are not yet sufficiently wedded to secure the most valuable results. It is the opinion of some observers that the fault for this is distributed between the two—it is questioned on the one

hand whether technical education does not continue to be too scholastic, and, on the other hand, whether industrial traditions are not still obstacles to closer co-operation. Whether this is so or not depends, in our judgment, largely on the scholastic establishment; and we hold this view because of the experience possessed of the uniting in an advisory capacity of the forces of industry with such educational centres, and so obtaining practical direction to the desired ends. Something of the same kind appears to us to be wanted in connection with the meetings of the British Association. There is too much about them which is terribly vague to the many, and only appreciated by the few. We all want to see advances in pure science and in knowledge; but we should also like to feel that this Association, which has long been a national institution, utilized its fine opportunities for promoting to a larger extent the more practical matters of the day. The meetings are too "scholastic;" and industrial science has little part in them.

Therefore, in addition to considering whether something cannot be done to bring our seats of technological study into closer bond with industry, it might be of infinite good if the British Association discussed the problem as to whether they could not devote at least a larger part of their annual meetings (to which the eyes of the world are directed) to the affairs of life which are of great and immediate importance. Perhaps it is thought that these matters are better left to the specialized institutions. But those institutions are not the British Association. They cannot, and do not, receive the same publicity; and therefore cannot produce the same result in respect of promoting public opinion and knowledge. For example, there was last year the large Power Conference at the British Empire Exhibition, at which was heard much as to the conservation of coal and the co-ordination of the utilization of the available fuel in the interests of our national economy. These are matters of great national importance; and the British Association would be doing a vast amount of good by removing for the nonce their consideration and discussion from those who are more or less partisans, and giving opportunity for a free discussion on a perfectly impartial platform. A great deal of good could be done in this way by the scientists whose work lies in these or kindred directions by bringing such matters—the one referred to is only an example of others—to proper focus. As it is, conferences such as the Power one of last year simply leave a mass of material in which less instructed men than those who took part in the proceedings, and yet men who may be largely influential in advancing national interests in such matters, are left floundering about without any proper means of guidance to decision, and so a great advantage is lost. We know that coal and carbonization questions have been before the Association at previous meetings. But in these directions there have since been advances; and a new order of thought regarding them exists among technical men. If the British Association would give at their annual meetings more attention to practical questions with scientific bearing, then, instead of interest in their proceedings being merely fleeting, they would accumulate much of a very practical and helpful character, which would endure in the minds of many men, and would carry a large influence for good.

We are afraid there will not be much in the proceedings this year of the British Association which will be of immediate interest to the gas industry. There may be something in the discussions on the problems of technical education; but beyond there are only a few subjects which have distant affinity with (as an industry) our scientific and technical interests. We see that Dr. F. M. Perkin will deal with a matter over which we know he has been expending much time in research—the treatment of peat as a fuel and the production of bye-products. There will be a joint discussion between the Chemistry Section (B) and the Engineering Section (G) on the ignition of gases. Prof. H. B. Dixon, F.R.S., of the Manchester University, will take part in this, as will also Prof. W. T. David, who will describe researches at the Leeds University. The production of flame in closed vessels will also be the subject of learned disquisitions; and to these Dr. O. C. de C. Ellis and Prof. R. V. Wheeler will subscribe. It is probable that a good deal of interest will at the meeting be aroused in engineering standardization; at any rate, it will not be for the want of effort if it is not. The Prime Minister recently made a strong appeal for increasing efficiency in industry as a contribution towards effecting a greater recovery and stabilization. One of the problems of the times is the reduction of the costs of production, if we are to compete on better terms in the markets of the world, and one means of doing this is more standardization—though we do not want it too inflexible. Mr. C. le Maistre will be treating of this subject; and he will call attention to the efforts at present being made to reorganize the British Engineering Standards Association and to enlarge the membership, so as to increase its influence, and thus its ability for good. Sections F and G will jointly meet to consider transport problems; and there is promise that Col. H. T. Tudsbery will make a large survey of road engineering questions. From the programme it is seen that in one part of the paper he will deal with materials and methods of construction. We are wondering whether he will touch upon the use of imported bitumen as opposed to home produced prepared tar.

Our earlier reflections in this article appear to be discounted somewhat by certain of the subjects to which we have just drawn attention; but, as a matter of fact, these more or less practical affairs are numerically buried away in the more recondite subjects which will by their mass dominate the proceedings. We believe there would be a great opportunity for good work by an expansion of attention on the part of the Association to affairs which enter largely into our national life; and through and by which—if properly directed and supported by the influence the Association possess—national economy and therefore prosperity would be materially served.

Wembley Day for Gas Salesmen.

The British Commercial Gas Association have fixed Wednesday, Sept. 30, as the day for the annual conference of the Salesmen Circles at Wembley. Full details of the arrangements are given in "THE GAS SALESMAN" issued with this number of the "JOURNAL." It is sincerely hoped that all chief officials of gas undertakings will do their utmost to make this event even more successful in respect of numbers than that of last year. These conferences, we are sure, have a tremendous influence among gas salesmen; and they do much to energize the desire to do all they can in their respective spheres in the interests of the undertakings they serve. We are confident that, if the managers of gas undertakings could have been present at the last annual conference, they would, then and there, have made up their minds that they would do all they could, in the interests of the industry, to give the greatest encouragement to the members of their public service staffs and to the Salesmen's Circles. The determination and enthusiasm among those present were very real. With the view of the acquisition of greater knowledge, the more work among and by them can be intensified, the better. Gas salesmen who are not members of Circles can also attend the conference by complying with the conditions as laid down in the arrangements for the occasion.

Gas Mantle Protection.

It is understood that the Committee appointed by the President of the Board of Trade in April, to examine the claims of the gas mantle industry for protection under the Safeguarding of Industries Act, have reported in favour of the imposition of 6s. per gross on imported mantles. The Committee, it is stated, have found little evidence of unfair competition. German prices, it is stated, are not much lower than for British makes; and while the wages in the German industry are not up to the British standard, they are not so far beneath it as to give an undue advantage. They also point out that, from the view of employment, the number of workers in the industry is relatively small—the calculation being about 4000. But the Committee appear to view the question more from the aspect that the gas mantle industry is the sole commercial outlet for thorium and cerium; and they felt that, if they re-

jected the claim of the mantle industry, there would most certainly be an appeal from the thorium and cerium industry. The Cabinet are now considering the report of the Committee.

Coal Exports.

In the month of July there was a little more liveliness in connection with coal exports, due entirely to the then precarious position in which affairs stood between the coalowners and the Miners' Federation. During the month, the total shipment of coal of all sorts was 4,442,256 tons. In the corresponding month of 1924, the quantity was 5,487,889 tons; while in July, 1923, the figure was no less than 6,767,255 tons. The values for the respective months were: 1925, £4,465,092; 1924, £6,363,621; 1923, £8,841,301. Of these figures gas coal last month represented 561,225 tons. The value is returned at £517,497—the average per ton being 18s. 5·3d. In July, 1924, the quantity of gas coal sent overseas was 785,598 tons; the value being £870,995. In July, 1923, it was 796,762 tons, the value of which was £999,291. Taking the seven months of the year, the exports of coal of all kinds totalled 30,290,669 tons. In the corresponding period of 1924, the quantity was 36,618,946 tons; and in the same period of 1923, 46,576,136 tons. The values of these quantities were: 1925, £31,377,428; 1924, £44,366,613; 1923, £59,256,731. In the seven months, gas coal exports amounted to 3,984,020 tons, the value of which was returned at £3,907,015. In the same period of 1924, the quantity of gas coal shipped was 4,997,530 tons, the value of which was £5,903,565. In the corresponding period of 1923, the amount was 5,444,976 tons, and the value £6,628,796.

Gas Coke Shipments.

There is little about the figures relating to gas coke exports which is at all cheerful in respect of either the past month or the seven expired months of the year. In July the quantity sent abroad was 46,695 tons, and the value £44,194, which averages only 18s. 11d. per ton. In July, 1924, the amount shipped was 65,102 tons; and the value was £110,724. In the same month of 1923, 82,806 tons were shipped, and the value was £140,305. In the past seven months, the exports amounted to 271,509 tons, and the value to £362,660. In the corresponding period of 1924, the exports were 507,819 tons; the value being £887,459. In the same period of 1923, the shipments were 589,574 tons; the value being £904,525.

The World's Coal Business.

The considerable erosion of our export trade in coal is not a temporary matter, unless we can meet the competition of other nations. This fact is accentuated by a consideration of the position of other countries in respect of production. It is true that, according to the United States Geological Survey, the world's coal production in 1924 (1350 million metric tons) was about 9 million tons below the 1923 output, but it was 8 million tons higher than in 1913—the pre-war record year. These figures in such a large total are not really heavy variations. But there are some significant changes in the returns from individual countries. In the United States the 1924 production of 520 million tons was 76 million tons below the previous year's output. There was a striking recovery in German production in 1924 following the Ruhr disturbances of 1923, and the increased output in France, the Saar, and Czecho-Slovakia. The German production in 1924 of 119 million tons was nearly double the 1923 output, though not quite up to the 1922 figure. Taking both coal and lignite together, German production dropped from 267 million tons in 1922 to 180 million tons in 1923, and rose to 243 million tons in 1924. The French output in 1924 amounted to 45 million tons, or more than double the 1919 figure, and was slightly higher than the pre-war level. Saar production rose in 1924 to 14 million tons, compared with 9 millions in the preceding year, and the output of Czecho-Slovakia (coal and lignite together) was 35 million tons in 1924, against 29 millions in 1923. Poland recorded a decline from 36 million tons in 1923 to 32 millions in 1924. As against the general increases in output on the Continent, British coal production fell from 280 million tons in 1923 to 273 million tons in 1924.

PERSONAL.

The new Secretary of the Hornsey Gas Company is Mr. K. Leslie Mortimore, who is at present engaged in the Chief Accountant's Department of the Gas Light and Coke Company. Mr. Mortimore served his articles with an important firm in the City, and is an Associate of the Institute of Chartered Accountants.

Mr. Kenneth Gandon, Chief Assistant Engineer and Manager of the Bath Gas Light and Coke Company, has been selected, from a very large number of applicants, for the position of Assistant Engineer and Manager of the Hornsey Gas Company. Mr. Gandon has been at Bath for nine years. His previous training was with the South Suburban Gas Company, under Mr. S. Y. Shoubridge, the late Chief Engineer. There he was a pupil for four years, and afterwards a junior assistant.

Mr. Ernest Körting (who will be remembered by members of the Institution of Gas Engineers who visited Berlin in June, 1908, when they were shown over the Oberspree and the Mariendorf Works of the Imperial Continental Gas Association, as well as the Tegel Gas-Works belonging to the Berlin Municipality, and were entertaind at Wannsee by the German Association of Gas and Water Engineers) is now Director of the Gasbetriebsgesellschaft—a Company carrying out the supply of gas to the City of Berlin. In a recent letter, Mr. Körting states that his father, Mr. Leonard Körting, who was for many years Engineer of the gas-works at Hanover, bears his age of 91 years with astonishing vigour, the consequence of a healthy and temperate life. Quite recently, with his son and grandsons, he enjoyed a trip by aeroplane, during which he had the pleasure of a view of the Berlin Gas-Works.

OBITUARY.

PROF. DR. HANS BUNTE.

It is with regret that we have to record the death, which took place on the 17th inst., in his 77th year, of Geheimer Rat und Professor Dr. Hans Bunte, late of Karlsruhe. For a great number of years past the name of Bunte has been almost as well known in the gas industry of this country as it has been in that of Germany. During his active professional career he was known personally to many English gas men, who were impressed by his genial bearing, his unfailing courtesy on all occasions, and the helping hand that he was ever ready to extend to strangers in his land.

At the close of 1920, Dr. Bunte retired from the active editorship of the "Journal für Gasbeleuchtung und Wasserfach;" and at the same time the title of that publication was changed to "Das Gas-und Wasserfach." He had had a long connection with the paper, the staff of which he joined in 1874. Two years later he became Joint-Editor, and from 1884 onwards was sole Editor. He was succeeded on his retirement by Prof. Dr. Karl Bunte, head of the Karlsruhe Experimental and Instructional Gas Institute, and Herr Karl Lempelius, of the German Commercial Gas Association. The thorough knowledge which Dr. Bunte possessed of the gas industry in Germany was revealed on countless occasions, but on none more clearly than at the 1918 meeting of the German Association of Gas and Water Engineers, when he opened the discussion on a paper that had been read by Herr E. Körting, formerly General Manager in Berlin of the Imperial Continental Gas Association.

In recognition of his distinguished services to gas manufacture, and of his valuable contributions to gas literature, the Council of the Gas Institute (as it then was) recommended in 1886 his election as an honorary member, and this recommendation was unanimously agreed to at the annual meeting held in London in June of that year. With Dr. Charles Carpenter and M. Laurain, he was in 1923 elected an honorary member of the Dutch Gas Association, in connection with the celebration of the fiftieth anniversary of that organization.

W. P. GIBBONS.

The many friends of the late Mr. W. P. Gibbons, Chairman of Messrs. Gibbons (Dudley), Ltd., and Messrs. Gibbons Bros., Ltd., will have learnt with regret of his death, which took place at Courtenay, Torquay, on the 15th of this month.

Born in Birmingham in 1856, Mr. Gibbons entered the firm of B. Gibbons, Junr., now known as Gibbons (Dudley), Ltd., in 1873, purchased the business in partnership with his brother the late Mr. Ben. Gibbons, and later converted it into a limited company, of which Company he was Chairman until his death. In 1875, these two brothers founded the firm of Gibbons Bros., Ltd., to deal with the contracting and constructional side of the business, which was rapidly developed both at home and abroad, during which process Mr. Gibbons was closely associated with the progress of modern carbonization. He took an important part in the study of the regenerative system of heating, the introduction of inclined retorts, and later, as an original

Director of the Woodall-Duckham Company, in the development of the vertical retort system.

Although the management of these two firms was the main work of his business life, Mr. Gibbons had other connections with the gas industry, having been for a number of years Chairman of Messrs. John Hall & Co., Ltd., of Stourbridge, refractory material makers, and a Director of the Wolverhampton and other Gas Companies. While of later years the private life of Mr. Gibbons was, owing to ill-health, somewhat retired, he had formerly taken a very active part in the affairs of the district where his works were situated—having been a Justice of the Peace, County Councillor, a Major in the Volunteers, and Chairman of the local municipal gas undertaking.

Mr. Gibbons married in 1894 Violet Mary, the daughter of the late Mr. George E. Stevenson, Chief Engineer of the Manchester Gas Department, and leaves a widow and five children.

Mr. R. C. BISHOP, who died on July 8, and who was until recently General Manager of the Christchurch (New Zealand) Gas Company, had long been a prominent citizen of what is now one of the most populous cities of the Dominion. Born in London in the year 1847, Mr. Bishop was about three years old when he went with his parents to New Zealand. His father was appointed Secretary to the Christchurch Gas Company on its formation, and Mr. R. C. Bishop later joined the Company's clerical staff. On his father's death, he was selected to fill the position of Secretary, which he held for the long period of 32 years. Ten years ago he was appointed General Manager of the Company; and at the date of his retirement, on the 1st ult., he had completed a total of 53 years' service with the Company. As long ago as 1879 he became a member of the Christchurch City Council; and some years later, when he had become a resident there, he was chosen as the first Mayor of New Brighton. He was one of the original members of the Incorporated Institute of Accountants of New Zealand, and took an active part in many local organizations. In June he was laid aside by an attack of bronchitis, and a subsequent improvement in health turned out, unfortunately, to be only temporary.

Mr. WILLIAM SEWELL, a Director of the Sunderland Gas Company, has died suddenly in a Newcastle nursing home. He was in his 76th year, and had been on the Board of the Company since 1904. He was also a Director of the Sunderland Water Company. As an engineer he carried through important railway works in England and Ireland. For the last three years he was President of the Sunderland Chamber of Commerce.

The death has taken place of Mr. ALBERT ROPER, of Bromsgrove, at the age of 75. He was for many years head of the firm of Messrs L. Roper & Co., nail manufacturers, and was a Director of the Bromsgrove Gas Company.

FORTHCOMING ENGAGEMENTS.

[*Secretaries of Gas and Kindred Organizations are asked to assist in making this diary of events as complete and useful as possible by sending the earliest intimation of all meetings.*]

Sept. 3-4.—NORTH BRITISH ASSOCIATION OF GAS MANAGERS.—Annual general meeting at Dunfermline.

Sept. 8.—NATIONAL GAS COUNCIL.—Meeting of Central Executive Board.

Sept. 9, 10, 11.—IRON AND STEEL INSTITUTE.—Autumn meeting in the University, Edmund Street, Birmingham.

Sept. 14-16.—INSTITUTION OF PUBLIC LIGHTING ENGINEERS.—Second annual meeting and conference at Leeds.

Sept. 15-17.—IRISH ASSOCIATION OF GAS MANAGERS.—Annual meeting in Belfast

Sept. 23.—EASTERN COUNTIES GAS MANAGERS' ASSOCIATION.—Autumn meeting at Stamford.

Oct. 19-21.—BRITISH COMMERCIAL GAS ASSOCIATION.—Annual conference and general meeting in Plymouth.

INSTITUTION OF GAS ENGINEERS.

Sept. 7.—2.30 p.m., Emergency Committee. 3.30 p.m., Finance Committee.

Sept. 8.—4.0 p.m., Advisory Committee on Education.

Oct. 12.—2.30 p.m., Refractories Research Joint Committee.

Oct. 13.—4.0 p.m., Consultative Committee of the Education Scheme, followed by meeting of the Advisory Committee.

Oct. 22 (provisional).—2.30 p.m., Emergency Committee. 3.15 p.m., Finance Committee. 3.45 p.m., Council Meeting.

Nov. 10.—4 p.m., Advisory Committee on Education.

Nov. 11.—11.30 a.m., Emergency Committee. 12.15 p.m., Benevolent Fund Committee of Management. 12.45 p.m., Finance Committee.

Nov. 25.—11 a.m., Institution's session at the Public Works, Roads, and Transport Congress.

Dec. 2.—Official visit to the Shipping Engineering and Machinery Exhibition at Olympia.

Dec. 8.—4 p.m., Advisory Committee on Education.

Dec. 9.—11.30 a.m., Emergency Committee. 12.30 p.m., Finance Committee.

ELECTRICITY SUPPLY MEMORANDA.

A GREAT deal has been said in these columns regarding the policy of extending service to gas consumers in the direction of efficiency maintenance, by inspection, adjustment, and cleaning of appliances. Several gas undertakings have adopted the policy with excellent results—fewer complaints and greater satisfaction, which means the reinforcement of the foundations of business. Maintenance should include not only domestic consumers, but industrial and trading ones. Universality is very important. It is the most effective barrier to the success of competitors in appropriating our business. In the approaching autumn, there is going to be a national lighting campaign by the electrical people. The Electric Lamp Manufacturers' Association are making themselves responsible for this; and it is announced that its first object is to bring home to shopkeepers the wonderful possibilities of good lighting as a sales force, and to persuade them to get estimates for a new installation. Shopkeepers, if they know their business, ought to be well aware of this. The reply that many of them will no doubt make to the appeal is that they have expended money on electric lighting; they accepted the advice given them at the time as to the form of installation; and they have no desire to incur so soon additional expense. Those whose gas lighting is of modern type and well maintained will see no good cause for making heavy expenditure for obtaining something which will bring them no extra benefit. Those whose gas lighting has been allowed to fall into disreputable state through their own negligence and the indifference of the gas suppliers will probably be easily persuaded to turn to electricity. The programme of the campaign will open by retailers receiving a booklet on Sept. 7 entitled "A Survey of Lighting in 800 Retail Shops," which is an account of an extended investigation made last winter, and deals with the vast business potentialities of the shop-lighting field. It is believed that this will mean a large "awakening" of shopkeepers, and a big accretion of business to electrical wirers and lamp sellers. The programme is of the "follow-up" order. The first booklet will be succeeded by a second one treating of shop-lighting designs. This will be illustrated by diagrams and reproductions of actual photographs, but no calculations will appear. Calculations are described as "tedious;" but surely there will be a desire to know through figures something of what is offered. With the ending of summer time, shopkeepers "of standing" will have posted to them a booklet entitled—"Light as a Sales Force." The receipt of the booklet, therefore, will assure shopkeepers that electrically they are regarded as of some "standing;" its non-receipt will indicate that electrically they are lightly regarded. It is stated that the idea is to prepare the ground for the salesman, and that it will be up to the live contractor to push himself into the opening thus created. Then, during October and November, the Association will publish advertisements in a comprehensive list of trade papers, urging the imperative need for modernizing shop lighting. Lecture demonstrations are also to be given to shopkeepers, local associations, chambers of commerce, and business men's clubs in all parts of the country. Anyone who wishes to lecture can have a copy of a standard one, entitled "Light and the Shopkeeper." No one will deny that the programme is an excellent one, and that the Electric Lamp Manufacturers' Association are—and properly—a body much alive to their own interests.

A Shop Lighting Campaign.

A Cooker Test.

An interesting test of a gas and an electric cooker has been made by Mr. H. H. Thomas, B.Sc., for the officers of the Liverpool Gas Company; and the results have been published in the Company's "Co-partners' Magazine." The test was of a simple hire gas cooker and a simple hire electric cooker. The same dinner was cooked for six persons under similar conditions in a house rated at £20 10s. per annum, with an average quarterly consumption of 347·1 units of electricity. The menu was: Tomato soup, fried plaice, ribs of beef (4 lbs. 1 oz.), potatoes, cauliflower, fruit tart, and cheese straws. The time taken to raise the temperature of the gas oven to 480° Fahr. was 5·5 minutes; of the electric cooker to 355° Fahr., 24 minutes. The time required to cook the complete dinner was by the gas cooker 67 minutes; by the electric cooker, 85 minutes. Among other interesting points is the one that the temperature of the gas oven was under instant control; while in the electric oven there was considerable lag between the switch movement and the actual alteration of the oven temperature. Another feature is that after a year's use it was found that in the case of the hotplate of the gas cooker there had been no appreciable loss of efficiency; whereas in the case of the hotplate of the electric cooker, the loss was 26 p.ct. Of course, the greater part of the cooking work is done on the hotplate of a gas cooker. We have frequently made this point as to the loss of efficiency on the electric hotplate. It is a constant source of complaint by users of electric cookers who want to be relieved of their misery in this regard by having a gas-boiling ring installed, and in not a few cases the restoration of the gas cooker

is sought. The cooking of the dinner referred to cost for heating energy by gas at 8d. per therm, 1·728d., and by electricity at ½d. per unit (*plus* rateable value payment), 6·805d. The details will be found set forth in "THE GAS SALESMAN" issued with this "JOURNAL."

Industrial Heating Costs.

The Automatic and Electric Furnaces, Ltd., have been attracted by some remarks of Mr. D. Milne Watson, and they have written to the "Electrical Review" to say that it is not surprising that engineering industries are not satisfied with electric power and lighting only. They declare that the economy effected in industrial heating by electricity is shown by the following tests, carried out by two engineering establishments—one in a "Wild-Barfield" electro-magnetic furnace, and the second in a gas-furnace. The Company give the following figures:

	Electricity.	Gas.
Output per hour . . .	29·75 lbs.	33 lbs.
Consumption per hour .	3·41 KW.-H.	250 c.ft.
Price	1d. per KW.-H.	3s. 11d. per 1000 c.ft.
Cost per lb. of steel . .	0·1185d.	0·355d.
Hardening cost per ton .	22s.	68s.

This, it is added, shows that gas for hardening costs 3·08 times as much as electricity. We are glad the "Review" made it clear that the Automatic and Electric Furnaces supplied them with the figures, because they are far from being confirmed by actual working results in other quarters. The Birmingham Gas Department have an unrivalled experience of gas furnaces for all kinds of metallurgical operations; and in a paper by Mr. H. R. Hems, published in "THE GAS SALESMAN" for March 25 last (p. 63), he mentioned that "a furnace of the counter-current recuperator type installed in our own wagon repair shops is used for the heating of wagon springs. The size is 7 ft. by 3 ft. by 18 in. high. In a period of 8 hours, 1 ton 8 cwt. 1 qr. of work is dealt with at a temperature of 800° C. for a gas consumption of 2·5 c.ft. per lb." Let us take the Wild-Barfield high price for industrial gas of 3s. 11d. per 1000 c.ft., and it is found that the cost per lb. works out at 0·1175d. per lb., as against 0·1185d. given for electricity at the price which expediency compels for electricity of 1d. per KW.H. The cost of treatment per ton, even at 3s. 11d. per 1000 c.ft., on the Birmingham experience would be 21s. 11d.; and Birmingham does not charge 3s. 11d. per 1000 c.ft. for industrial purposes. Another point of the "Wild-Barfield" figures is that they suggest that electricity can do, by an expenditure of 900,768 B.Th.U., work which requires an expenditure in gas equal to 8,680,000 B.Th.U. (calculating 500 B.Th.U. per c.ft.). We would suggest to the "Electrical Review" that before accepting figures such as those sent to them, they should ascertain what they actually mean, and whether they represent fair practice for both heating agents. The only thing we admire about the "Review" paragraph is that it states: "The Company give the following figures"—thus shielding our contemporary from any responsibility for their authenticity or fairness. Another point for consideration is: Why is it the gas furnace makers are turning out furnaces in such numbers as they are doing to meet the requirements of manufacturers? We should like to have exact figures for comparison of the number of gas furnaces and electric furnaces sold (say) in the past twelve months.

A New Bond.

Women are now taking an important part in creating new relationships between the utility undertakings and the public. In this country, as we have on various occasions pointed out, there is an Electrical Women's Association directed to the development of the domestic uses of electricity. In America there has been the same innovation; and it preceded what is being done in this country. The "Electrical Times" records that, at the recent convention of the National Electric Light Association in America, women took a large part in the Public Relations Section. On the occasion, a prominent member of the American gas industry is reputed to have said: "You are building-up a new bond between your industry and your customers of such an intimate nature that it will be of tremendous strength and influence for good." Commenting upon this, the "Electrical Times" says the Women's Electrical Association should be encouraged in every possible way; and it adds: "Doubtless some gas men in this country, though not so outspoken about it as their confrère across the Atlantic, already see the danger that the growth of this Association into a powerful organization will be to their industry." It is not so bad as that. The gas industry is probably working in several directions where there is no definite operation on the part of the electrical industry. A women's organization in the gas industry is not an impossibility—when the time is ripe for it.

A Deserved Shock.

Would-be thieves should wear india-rubber gloves; otherwise they may be foiled by electricity in their nefarious professional work, and at the same time receive an unpleasant surprise. Lately a man coveted the gold nuggets and dust in the Aitken Gold Field exhibit at Wembley. The hoped-for booty was in a show case; and the would-be thief, in attempting to appropriate the case, severed the wires connecting with the main the light inside the show case. The result was that he received the full force of the pressure—240 volts. The man apparently undid the thumb screw which secures the case to the counter; and he had only to cut the wire in order to get away with the case. But he used uninsulated shears, and consequently received a shock. The man cried out, dropped the shears, and ran through one of the doorways. A bolt and a padlock will add to his difficulties should he again attempt the game at the same spot, with the same object in view.

HEAT OF CARBONIZATION OF COAL.

Recent American Work.

The July issue of "Fuel in Science and Practice" contains a detailed account of the work carried out by Davis, Place, and Edeburn, of the Pittsburgh Experimental Station, Bureau of Mines, on the heat of carbonization of coal. [It will be remembered that important work on the subject was done by Hollings & Cobb in 1914—see "JOURNAL" Vol. 126, p. 917.]

In the present investigation the heat of reaction during carbonization was determined for American coals of several ranks by means of a twin constant volume calorimeter. As it was realized that this method would sum the effect of all reactions—exothermic and endothermic—up to the maximum temperature of carbonization, different maximum temperatures within the primary carbonization range were employed to find the variation in reaction heat with temperature. The limiting temperature was 650° C. The tests were carried out with few exceptions in an inert atmosphere (nitrogen). Besides the effect of varying maximum carbonization temperature on carbonization heat, other factors were investigated—viz., reaction heat contributed by anthraxylon and attritus,* and the alpha, beta, and gamma constituents. The reaction heat of products of primary carbonization was determined, as well as the effect of carbonization in atmospheres of hydrogen and carbon dioxide.

The following conclusions are drawn from the results.

1. It is difficult to fix with great accuracy the heat of carbonization of a coal for any given maximum temperature, because the character of carbonization reactions cannot be sufficiently controlled. This is particularly true of primary carbonization where the character of the reactions vary so widely with temperature. A variation between duplicates of 25 p.ct. around 500° C. maximum temperature is not unusual.
2. The maximum exothermicity for coking coals occurs around 500° C., though some of them appear to have high exothermic points at 600° C. Under 400° C. they are usually endothermic or very slightly exothermic. The maximum heat evolved for this rank of coal is never over 50 calories per gramme.
3. Anthraxylon gave carbonization reactions somewhat less exothermic than attritus. It is believed that this is because the former contains more of the coke-cementing constituents, which are endothermic.
4. Alpha and beta compounds are exothermic, and gamma compounds are endothermic. In other words, the coke-cementing constituents are endothermic.
5. As far as could be determined, the products of primary carbonization are endothermic. That is, one goes from a primary tar to a secondary tar through endothermic reactions.
6. Preoxidation at moderate temperature (120° C.) renders carbonization reactions less exothermic. Preheating in hydrogen up to 200° C. has no effect.
7. Carbonization in hydrogen results in more exothermic reactions at temperatures under 450° C. Above 450° C. the reactions are usually less exothermic than in nitrogen. Carbonization in carbon dioxide increases the exothermic reactions at temperatures around 500° C. The effect is probably mainly on the gamma constituents of the coal, since these are responsible for coke-cementing power, and it is known that coal does not coke satisfactorily in an atmosphere of carbon dioxide.

* These terms are applied by Thiessen to coal constituents distinguishable by the aid of the microscope. He has shown that anthraxylon is derived mainly from large pieces of wood. Bright bands seen in coal are anthraxylon, which, as far as one can judge, includes the vitrain and clarain of Stopes and Wheeler. Attritus, derived from leaves, bark, fruit, spores, &c.—in fact, all the material making up the coal mass which is not formed from wood in bulk (except fusain)—appears to correspond to durain.

Scottish Junior Gas Associations.—The printed joint transactions of the twenty-first session of the Scottish Junior Gas Associations—Eastern and Western Districts—reveals no falling off in activity on the part of these useful organizations, which enjoyed a busy and interesting session, under the Presidency of Mr. R. L. Laing (Eastern District) and Mr. J. M'Isaac (Western District).

EXHIBITION AT STOCKTON-ON-TEES.

During the Railway Centenary celebrations at the beginning of July, an exhibition was held in the St. George's Hall, Stockton, which was divided into three sections—historical, railway, and the industries of Stockton and neighbourhood.

The exhibit of the Stockton Corporation Gas Department proved of great interest; and we reproduce a photograph of the stand, sent to us by Mr. W. W. Atley, the Engineer and Manager. A large block of coal measuring 3 c.ft., seen on the left of the photograph, attracted much attention, as also did a series of dyes shown by various coloured ribbons fastened to the bottles containing the corresponding colours. Favourable comment was passed on a distance control switch for operating the centre gas light.

LIGNITE FOR GAS MAKING.

For practically a twelvemonth now coal gas has been made exclusively from lignite in the plant of the Sheridan (Wyoming) Gas and Fuel Company; and though lignite had before this been utilized, mixed with coke, for making water gas in other localities, Mr. H. J. Forward (Gas Manager to the Company) believes that his is the first and only plant to make straight coal gas in standard half-depth benches using lignite—a non-coking coal—for both retorts and furnaces. No so-called gas or coking coal or coke whatever is utilized in the plant. In an illustrated article appearing in the "American Gas Association Monthly," Mr. Forward sets forth the results of working which have convinced him that in the future large quantities of this so termed low-grade fuel will be employed for gas-making purposes, and that managers situated within a reasonable distance from lignite coalfields will find it well worth their while to investigate its possibilities.

The coal gas plant was originally erected at Sheridan, some nine years ago, with the idea that the lignite mined near the town could be made to produce a satisfactory gas; but after repeated failures the effort was abandoned, and the use of gas coal shipped from 900 miles away was resorted to. This resulted in a high cost for coal; and shortly after Mr. Forward took over the management four years ago, he determined to experiment again with lignite. After more than two years experimenting, methods were perfected for using lignite exclusively, not only in the retorts, but as furnace fuel as well. This has reduced the coal carbonized cost from $1.84 to 30c. per 1000 c.ft. of gas sold. In place of coke, there is a residual—called "breeze," for lack of a better term—which is an excellent boiler fuel, and sells readily in competition with lignite screenings, netting the Company about $1.25 a ton. The yield of tar is about 5 gallons per ton of lignite carbonized.

With regard to the heating of the furnaces, the temperature ranges from 2400° to 2700° Fahr., with no difficulty whatever, and at a reasonable cost. For the first four months of this year, the bench fuel cost was 74·7c. per ton of coal carbonized. The analysis of the lignite used is: Moisture, 22·25 p.ct.; volatile matter, 35·01 p.ct.; fixed carbon, 39·01 p.ct.; and ash, 3·73 p.ct. It contains 0·37 p.ct. of sulphur. The gas supplied to the town averages 535 B.Th.U.

North British Association of Gas Managers.—The annual general meeting of the Association will take place in the Council Room of the City Chambers, High Street, Dunfermline, at 10.30 on Thursday morning, Sept. 3, under the Presidency of Mr. James Campbell. After the transaction of formal business and the delivery by the President of his address, there will be an adjournment for luncheon, and the afternoon will be devoted to the consideration of papers by Mr. James J. Scott, of Cowdenbeath, on "Present-Day Requirements in Gasholder Storage," and by Mr. James Dickson, of Kirkintilloch, on "Reducing Unaccounted-for Gas." On the evening of that day, the Lord Provost, Magistrates, and Councillors of the City and Royal Burgh of Dunfermline invite the members and friends to a reception and dance in the Carnegie Trust Gymnasium, Pilmuir Street; and for Friday, Sept. 4, an excursion has been arranged to Taymouth Castle; a special train leaving Dunfermline Lower Station at 9.30 a.m. The President and Mrs. Campbell have got together an attractive programme for ladies attending the meeting; and there are also the annual golf and bowling competitions. Everything therefore promises a highly successful meeting.

Dry Gasholders.—M. Baril, referring to the translation, on p. 274 of the "JOURNAL" for July 29, of a further note by him on the subject of the paper he read at the Institution Meeting, asks us to substitute the following formula for the last one given:

$$P = \phi\left(\frac{p\,D}{2R} \cdot h \cdot \pi\, D \cdot \Delta_1\right).$$

CHEMICAL TOPICS FROM CURRENT LITERATURE.

Notes from Recent Technical Publications.

By H. J. HAILSTONE, A.M.I.Chem.E.

PNEUMATIC TRANSPORT.

In Prof. Cramp's address before the Hull Chemical and Engineering Society, which is printed in the Transactions of the Society of Chemical Industry, the various principles of pneumatic transport are elaborated. This form of transport for granular material, though stereotyped in the grain industry, has only recently been applied in the gas industry—mainly for handling oxide. The fire hazard, formerly thought to be a serious obstacle, is by no means so great as was supposed, and the experiences of the pioneers in this practice are tending to give great confidence in its possibilities.

CONCRETE.

In December, 1923, I referred to work conducted at the Lewis Institute, Chicago, on the subject of concrete making (see "JOURNAL" for Dec. 26, 1923, p. 833). The importance of the quantity of water used for mixing was emphasized, as the resulting strength and resistance to wear are dependent upon this factor. The Lewis Institute have now issued a further bulletin, by Prof. Abrams and S. Walker, which contains tables giving the relative proportions of materials of various grades for producing concrete of the strength required. There appears to be ample scope for applying these scientific methods to concrete mixing, and in the numerous demands of the gas industry they will find a good field. In this connection the Cement Marketing Company have issued a pamphlet dealing with the rapid hardening cement "Ferrocrete." In addition to speedily maturing, this material is said to produce a waterproof concrete—a quality greatly to be desired in gas-works structures. Its particular applicability to emergency work is pointed out, and the data from compression tests are quoted.

PURIFICATION.

In the absence of a more reliable laboratory method for determining the activity and value of an oxide for gas purification, the method of fouling with pure sulphuretted hydrogen is often practised. For this purpose there can be no more convenient or cleanly a method of preparing the gas than that described by Mr. Henwood and others in the Journal of the Franklin Institute. They take a mixture of sulphur, paraffin wax, and asbestos flour in a tube. This is very gently heated, and thereby evolves a liberal supply of pure sulphuretted hydrogen until the source of heat is removed. A method such as this must soon displace the messy generator which employs ferrous sulphide and hydrochloric acid. For information on the factors which affect the activity of oxides used for sulphuretted hydrogen removal, the reader might well consult the technical paper issued by the United States Bureau of Mines. The work of Messrs. Dunkley and Leitch deals with the effect of water content, the nature of the oxide, and the temperature of the reaction.

CRYSTAL CONTROL AND "CAKING" PHENOMENA.

A description of a process for the formation and separation of large crystals recently appeared in "Chimie et Industrie," due to Isaachsen and Jeremiassen. According to this process a vat with a false bottom is charged with concentrated solution, which may be drawn from the bottom and heated. Crystals develop when the steam evaporates from the heated liquor on its return to the top of the vat. The crystals growing and accumulating on the false bottom are removed from time to time and washed with fresh solution flowing upwards, which removes the smaller crystals and leaves the larger ones. The process is said to have been successfully worked out for manufacturing salt crystals; and it is highly probable that the large-scale grading of sulphate crystals and the removal of sulphate flour could be accomplished by an elutriation method of this type. With regard to caking troubles, which are not alone experienced by sulphate makers, Mr. Krase and others writing in "Chemical and Metallurgical Engineering" with particular reference to nitrate of ammonia crystals formed by solidification from molten masses during stirring, remark that higher moisture content results in smaller grains of less strength and greater liability to cake. In order to counteract to some extent the hygroscopic nature of the material, it may be treated with a small amount of liquid paraffin applied warm. It would be an interesting speculation to consider the application of similar methods of dealing with the sulphate problem. The present very low prices for this product, however, will not greatly encourage consideration of any but the simplest and cheapest of methods for improving the nature of sulphate crystals.

As with deliquescent solutions and crystals, where moisture contents very quickly respond to variations in temperature and humidity of the surrounding atmosphere, so it is also with textile materials. The British Launderers' Research Association have issued a report dealing with the subject and describing the design and construction of a constant humidity room. Such a construction (essential for work upon certain textile problems) would be an invaluable adjunct in conducting necessary investigations on the caking phenomena of sulphate of ammonia. For just as changes in moisture contents of fabrics are attended by marked variations in the physical properties, so also does moisture largely contribute to the caking qualities of sulphate. A detailed investigation of this problem, long overdue, is highly desirable, and is of much more than academic interest. The effect of the size of the crystals and the presence of traces of pyridine, free acid, sulphate of soda or lime (from the use of soda ash or lime in neutralizing), and other impurities on moisture absorption could be readily demonstrated in a well-equipped conditioning room of the type so carefully described by Messrs. Parker and Jackman.

SULPHUR IN COAL.

A new method of determination, due to W. Meade, has been detailed in "Industrial and Engineering Chemistry." A convenient weight of the coal is heated with iron filings and lead oxide on a layer of zinc oxide in a closed porcelain crucible. The product is treated with hydrochloric acid, when the sulphur is evolved as sulphuretted hydrogen, which is absorbed in a solution of cadmium chloride. This may be titrated with standard iodate solution using starch indicator; and from this the sulphur content is calculated.

GAS ANALYSIS.

An easily constructed and inexpensive absorption pipette, described in the Transactions of the Society of Chemical Industry by A. O. Jones, consists of a bulb of about 100 c.c. capacity. It is fitted with a small tap funnel at the top, and a fine capillary tube is introduced at the bottom through a tube with a mercury seal. A levelling vessel of about the same capacity is connected by rubber tubing to the pipette. When making tests the gas is introduced and withdrawn through the capillary tube, and the reagent is added by means of the tap funnel. All absorptions are made in the same vessel, using the various reagents required.

Another apparatus, for micro-analysis, is designed by J. Christiansen (Journal of the American Chemical Society) and is capable of giving accurate results from 0·1 c.c. of gas. The measuring device is a capillary tube having a bulb at the top and bottom. The gas is confined by means of U-tubes containing mercury.

Messrs. Sutton and Ambler, in a comparison of methods of absorbing carbon monoxide, given in the "Analyst," state that Lebeau and Bedel's reagent (cuprous sulphate and betanaphthol in sulphuric acid—see "JOURNAL" for Dec. 31, 1924, p. 901) retains its activity for longer periods than ammoniacal cuprous chloride, though it is somewhat slower in action. Quick absorptions, however, may be obtained by heating the former reagent and using at about 60° C.

LUBRICANT TESTING.

Sir W. H. Bailey & Co., Ltd., of Manchester, issue a catalogue of their various apparatus for the testing of lubricants. Among others appear descriptions of instruments of the "Thurston" type enabling comparative investigations on different oils to be carried out quickly. In these instruments a loaded journal, having provision for adjusting the pressure, is lubricated with the oil under test, and its behaviour as regards rise in temperature and friction may be readily observed during any period of testing.

"Petroleum" publishes a method due to M. Borodulin for determining the viscosity of oils by noting the time of fall of drops of water through a depth of 10 cm. of the oil. The density of the oil, as well as its viscosity, affects the time of fall, and must be allowed for.

For determining the consistency of lubricating greases, W. Normann ("Chemische Umschau") makes use of a pointed rod of definite dimensions and weight. This is dropped from a given height upon a sample of the grease at standard temperature. The depth to which the rod penetrates gives a measure of the consistency of the sample.

PAINT COMPARISONS.

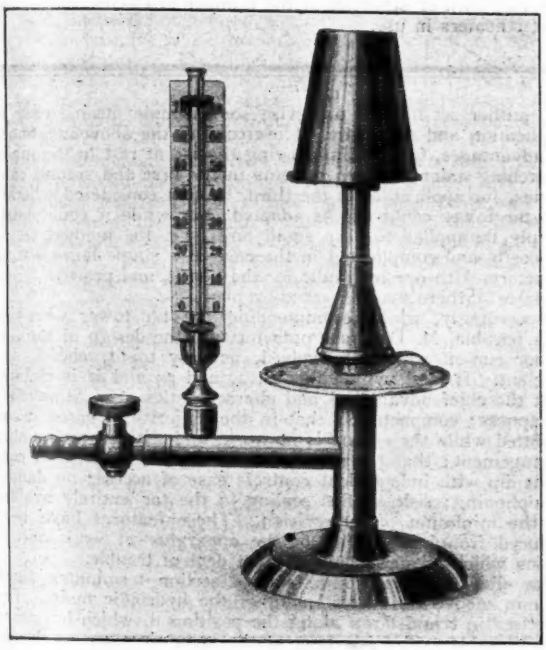
"Farben Zeitung" gives an account of a method used by Wolff and Cohn in examining paints. They use an instrument designed on the lines of the "Stormer" viscosimeter. Paint is put into a cylinder, and in it is immersed a rotating stirrer of S shape which may be put into motion by means of a loaded poise. The rate of rotation bears an inverse ratio to the viscosity.

American Gas Companies' Dividends.—The American Gas Association announce that the successful efforts of the Gas Companies in New York City to free themselves from the confiscation threatened by the enactment of the 1923 Statute prescribing a $1 rate for gas of not less than 650 B.Th.U. have led to three decisions in the Federal Courts during the past month, which constitute notable additions to the precedents determining the right of gas corporations to earn an 8 p.ct. return upon the full present value of their tangible and intangible properties. The rules of valuation law thus laid down are, of course, of general application to all gas companies and public utilities throughout the country.

NEW TEST BURNER.

In " Das Gas- und Wasserfach " for July 18, Herr Friedrich Lux described a simple apparatus designed by Prof. Dr. Ott, of Zurich, by which it is possible at any moment to see whether the gas, as it leaves the works, or at any other point of manufacture, is conforming to any required standard as to calorific value, specific gravity, and composition. It will not give results for any of these separately, but it is claimed that together they constitute the essentials for the good working of consumers' burners. Dr. Ott has aimed at devising an apparatus which will show at a glance, and without complicated manipulation, whether the standard to which it has been set is being maintained.

The burner used is shown in the accompanying illustration. The circular scale is divided into 100 graduations, and the figure which is shown by the pointer when the gas is just about to light back is certainly only a comparative one, but it is a very important factor, as illustrating the behaviour of the gas in consumers' burners. Once this figure is established for a gas of mean quality as regards calorific value, composition, and specific gravity, with the burner tube heated up, the gas which is being made at any given moment can very quickly be tested to see whether it conforms, within the permissible limits above or below, with the standard quality.



Dr. Ott's Test Burner.

The method of working is as follows: The primary air regulator is completely shut, so that the pointer is at zero on the graduated scale. The gas inlet is then so regulated that the gauge shows a pressure of about 40 mm. The gas is next lighted, and, owing to there being no primary air, it naturally burns with a luminous flame. Primary air is now admitted, by turning the pointer, in gradually increasing quantities. The flame becomes less luminous, and the greenish inner cone appears, and becomes gradually shorter until its apex is nearly down to the burner mouth. Soon there is a rythmical popping of the flame due to a series of small explosions, and if the supply of air is then increased by very little, the flame lights back.

There is, however, no need to carry the test as far as that, the reading being taken when the regular popping is observed, thus saving time in relighting and damage to the burner. As the tests are to be carried out at a pressure of 40 mm. at the inlet to the burner, this point on the pressure gauge is marked in red. But experience has shown that variations in pressure between about 35 to 45 mm. hardly affect the readings.

The apparatus is intended primarily for use on the gas as it leaves the works. But it is suggested that it may be found very useful at other stages of manufacture, especially where water gas is made, or several retort settings are in use with separate gas outlets, in order to locate the existence of any serious divergences from the normal gas quality. In order to ensure that the burner always contains fresh gas, it is as well to keep it always lighted, the air being so adjusted that there is no possibility of lighting back.

The apparatus is provisionally protected in Germany, and is supplied by the firm of Friedrich Lux, of Ludwigshafen.

GAS AND ELECTRICITY AT IDAHO.

By W. D. WILCOX, of the East Idaho Gas Company.

I read with interest the " Electricity Supply Memoranda " and editorials in the weekly issue of the " GAS JOURNAL." Over most of the United States there is satisfactory harmony between the two utilities, due largely to a common ownership of the two by a holding company.

The electric utility concentrates on an extension in the use of electric current for light and power. The gas company makes little effort to extend lighting with gas, but cares for what it has; and, having adopted as a slogan " If it's heat you want, you can do it better with gas," it devotes attention to extending the use of gas for cooking and water heating in the domestic field, space heating, and industrial applications. There was some reluctance in the beginning to yielding the lighting field, but most are now reconciled to this.

Out here in the mountain country, the situation is different. Many communities are not supplied with gas. The hydro-electric plants, because of the large water power available, were generally built with a generating capacity much in excess of the immediate need for light and power of the community served. The existence of this surplus generating capacity not saleable for those uses in which the largest value per KW. is realized by the consumer, has tempted, and to some extent justified, the managers of the electric plants in the establishment of low heating rates. Some have proved profitable, others disappointing.

The Utah Power and Light Company, supplying current to a large area in Colorado, Utah, and south-eastern Idaho, charges, for current supplied to electric ranges, 4c. for the first 50 KW. used in any month, and 3c. for all used in excess. The ordinary family using electricity exclusively for cooking and baking requires 200 units a month, which would make the bill $6.50. The fact that in much of the territory gas is not available, contributes to the success of the Electric Company in charging more than would be the cost for gas. The ranges are sold by the Electric Company, those of larger capacity at from $140.00 to $195.00, at a substantial profit. Some trouble has been experienced with the ranges first installed. The burning-out of the heating elements has been frequent, and maintenance an item of expense.

Such data as I have been able to obtain indicate that a majority of those using electric ranges in the Utah Power and Light territory employ them chiefly during the hot weather of the summer, in connection with a coal range used when the temperature makes such a range a source of comfortable heat. The actual average consumption is stated to be 73 KW. per month. One effect of this seasonal use is to improve greatly the margin of actual profit. The major demand for current is during the long days of the summer, ending for the most part before sundown, so that the generating capacity required to supply the ranges is available for the generation of light later on. Where gas is not available, this service is believed to be worth its cost to the users at rates profitable to the Company.

Some other experiments in the supply of electrical heat have not proved so satisfactory. The Idaho Power Company, serving south-western Idaho, made a flat monthly charge of $2.00 for the supply of current to a 600-watt tank heater, and $2.75 to a 1000-watt heater. This service proved very popular in better-class homes. Many kept the current turned on all the time, making the tank of hot water help in heating the kitchen or bath room during cold weather.

In December, 1923, this Company went before the Public Utilities Commission of the State, asking for authority to increase its rates, and introduced figures from its records which showed that the income per KW.-year from water heaters was short by $30.00 of paying a proportionate share of operating expenses, " with no return whatever upon the large investment required to give service." The Commission permitted an increase, but the rate established does not make the income sufficient to cover investment cost. Many have discontinued the use of these water heaters.

At Minidoka, a power plant for pumping water for irrigation was built by the Federal Government. This use was only during the five months of the growing season. The existence of this plant with no winter load led to an experiment in house heating with electricity. As a matter of experience, very few are willing to instal a sufficient resistance to provide comfortable heating during extremely cold weather. My information with reference to the rates charged is not complete; but they have been advanced for the reason that the cost of distribution was found to be higher than the original estimate.

In Idaho Falls, a municipally owned hydro-electric plant supplies electricity for light at 10c. per KW., subject to a small discount for prompt payment. Current to electric ranges is supplied through a second meter at 2c. for the first 250 KW. per month, and 1c. thereafter. Current is supplied to 1000-watt tank heaters at a flat rate of $2.00 a month. The operation of the plant shows some profit, owing to the use of electricity for light by practically 2000, while the number of ranges is

approximately 240, and of tank heaters about 100. The investment in the hydro-electric plant, *less* accrued depreciation, is $419,600. The maximum output at the hour of greatest use in 1924 was 1250 KW.

The investment per maximum KW. sold is	$335.68
Figuring interest at 6 p.ct.	20.14
Depreciation at 5 p.ct.	16.78
Profit equivalent to the taxes paid, were the plant owned by a private company	5.00
The annual investment cost per KW. is	41.92

The average maximum demand at the plant for each range, as nearly as can be determined, is 2½ KW. Excluding the small two-element hotplates used chiefly in hot weather, the average maximum demand is all of 3 KW.

At 2½ KW. the annual investment cost to serve each range is	$104.80
With an average consumption of 200 KW. per month, the income is something under $4.00 a month, or	48.00
Annual deficit per range	$ 56.80

Not including operating costs, maintenance, accounting, collecting, and supervision.

In this part of the world more food is cooked and eaten in the winter than during the summer. Dinner is the big meal, served from 6 to 6.30. The maximum demand of the electric range is between 5.30 and 6. At this time all the lights are lighted in the stores and on the streets, and there is nearly a maximum use of lighting in the homes. This means that, to supply service, there must be generating capacity to supply the ranges, entirely independent of the plant employed to supply light, and, because of a relatively small power demand, yielding no revenue from other uses during the period of less than maximum use.

Something over $100,000 has been added to the plant investment during the past five years, with substantially no increase in gross income. Shortage of water at certain seasons has made the purchase of current necessary. The administration is now urging the investment of $92,000 in a Diesel engine plant, to help out during times of low water. Were each of 1000 families not now using electricity for heat to instal a standard electric range and 1500-watt heater, it would be necessary for the city, in order to supply service, to invest $1,500,000 in a hydro-electric plant up in the hills, with transmission lines and increase in capacity of circuits, transformers, and meters. With interest and depreciation at 11 p.ct., the annual overhead would be $165,000. An assumed payment of $7.00 per month per family would yield a gross income of $84,000, leaving a deficit of $81,000, *plus* the entire operating costs, to be met by taxation or some other source of revenue.

It is rather fortunate for the city that our Gas Company is giving equivalent service at a cost much less than $7.00 per month, and increasing its list of consumers more rapidly than electric ranges are being installed. It is, however, seriously handicapped by a division of the heating field, and cannot give as good value to the public as would otherwise be possible.

When the electrical propagandists tell of what is being done where electricity is generated by water power, do not overlook the fact that all may not be as it appears from a reading of the rate card or statistics of the number of electric ranges and water heaters in use.

SIMPLE METHOD OF HYDRAULIC MAIN EVACUATION.

[A Paper by M. Delahaye before the Société Technique]

If hydraulic mains are considered from the point of view of the working of the tar and the ammoniacal liquor, they may be readily divided into three categories. The first of these comprises mains in which the tar is run off continuously as it accumulates. The dip-pipes are submerged in the liquor, but are not reached by the surface of the tar. This is the system generally adopted by the gas industry. The second category embraces hydraulic mains, in which tar evacuation is intermittent, and carried out by the manipulation of valves and wash cocks. Here, again, the surface of the tar does not rise to the dip-pipes, so long as regular attention is given to the clearing. The method is not as satisfactory as the first, for extra labour is involved, and careless working may result in bubbling of the gas in the tar.

The third class comprises those hydraulic mains in which the ammoniacal liquor and the tar negotiate, as they can, the same outflow—usually a fixed diaphragm or a weir valve. In such mains, still largely in use on old settings and in small works, there is nothing to prevent the level of the tar rising above the dips; and the gas, bubbling into the tar, loses hydrocarbons, takes up naphthalene, and gradually thickens the tar in the main. When high temperatures are used in the setting, or if the temperature of the hydraulic rises for any other reason, it is not unusual for the tar to thicken and become almost solid. This type of main should therefore be avoided as far as possible.

Having in view the more or less satisfactory working of the second type of main specified, and the deficiency of the third, the author set himself to devise some simple means, easy of application and not costly, of overcoming the above-mentioned disadvantages, by avoiding leaving the tar at rest in the main. Searching among known systems in the first and second categories, for application to the third, he first considered whether the tar tower could not be adapted; but while it could fairly simply be applied to very small units, yet the method would be costly and complicated in the case of a single large setting of retorts with one hydraulic for the bench, and practically impossible if there was no stand-by plant.

Accordingly, while recommending the tar tower whenever it is feasible, M. Delahaye puts forward the design of tar and liquor run-off which he evolved, as easy to fit, cheap, and efficient. It is shown in figs. 1, 2, and 3; and it is claimed that the chief advantages and characteristics are: Simplicity; cheapness; compactness; that in the majority of cases it can be fitted while the setting is at work, and without preliminary arrangement; that tar evacuation is regular, assuring a constant dip with independent control; ease of access; no danger of siphoning; risk of dips sealing in the tar entirely avoided by the minimum of supervision. These features have been deduced from observation of the apparatus at work on old mains which formerly gave a great deal of trouble.

An elbow *c* of 100 mm. square section terminates about 80 mm. above the lowest point of the hydraulic main. The tar rises in *c* and flows along the position *d*, which by means of a closable orifice *i* is kept at the same pressure as the interior of the hydraulic *h*. A pipe *e*, 60 mm. internal diameter, depends from *d*, and is sealed in the tar sump *f*. This pipe *e* is screwed, and can be raised or lowered in *d*. From the sump *f* the tar flows away through *g*, which pipe also conveys the liquor which passes over the weir valve *a*. Chamber *d* is provided with a gas-tight inspection door, which is also convenient for cleaning purposes; and when it is necessary to open

Fig. 1 Section D.D.

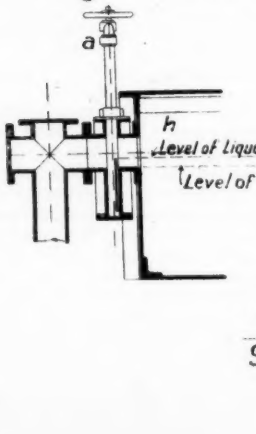


Fig. 2. Section C.C.

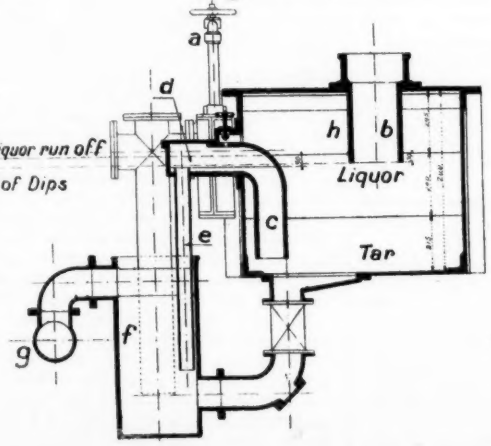
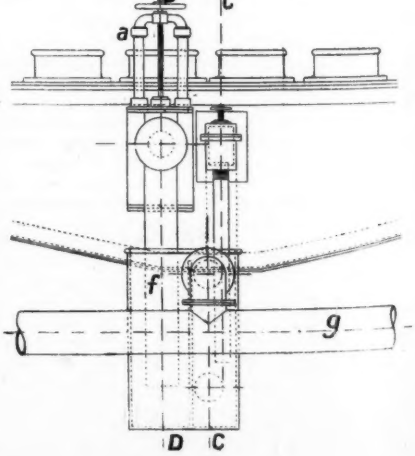


Fig. 3. Elevation.



it, the hole *i* in the upper part of *d* may be closed by a screw-down valve if it is deemed inadvisable for air to reach the hydraulic.

In fixing the apparatus, all that is necessary is to pierce the side of the main with a rectangular opening large enough to pass the elbow fitment, which has a seating secured by four bolts. The opening must be made at such a level that the bottom of *d* will come 2 or 3 cm. below, or level with (according to circumstances), the bottom of the dips. Working is commenced by adjusting the pipe *e* so that its upper end is slightly above the liquor level adopted for the dip seal (as given by the independent valve), closing the inspection door, and opening the valve *i*. When enough tar has accumulated in the main, the pipe *e* is adjusted to give the desired level, which will remain substantially constant.

It has been asked whether the tar does not thicken in the main sufficiently to prevent its rising in the elbow and flowing off. It does not remain long enough; but care must be taken to preserve ample space (80 to 100 mm.) between the bottom of *c* and the main. Otherwise residual deposit will gradually be forced up *c* and eventually block *e* completely. Chamber *d* and the bottom of the main should, of course, be cleaned at regular intervals. Another question put is whether, for a certain setting of the liquor weir valve, the separation level of the tar and liquor remains constant. The author has not come across variations greater than 2 to 3 cm.—due to varying density of the tar through different coals or retorting conditions.

No case of stoppage of the port *i* has come to the author's knowledge; but that there is little danger through siphoning, even if stoppage occurs, was proved by screwing down the valve and leaving it so for 48 hours. The normal conditions still held—a fact which M. Delahaye attributes to the viscosity of the tar, which flows so slowly as to prevent any priming action occurring in the would-be siphon.

FURTHER NOTES FROM THE SOCIÉTÉ TECHNIQUE PAPERS.

THE NEDAR TUBE.

The Council of the Institution of Gas Engineers recently acknowledged the gift of a specimen of the Nedar tube from M. Paul Bachelay, of Toulon, and reference was made to the description he gave of his invention before the meeting of the Société Technique. The tube has been devised to resist the erosive effects of stray electric currents, for it is certain that, though methods exist for tracing the responsible party and bringing him to book, prevention will be more popular than cure.

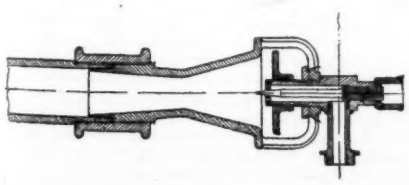
Many municipal authorities and well-known firms have already accorded their patronage of the Nedar tube; and even the General Post Office of France has sanctioned its employment in view of the fact that "a test has shown that for telephone lines the tube is really a most effective protection against electrolysis." Though this official pronouncement was only made in November, 1923, the Nedar tube is already installed for telephone service at Paris, Asnières, Amiens, Rennes, Saint-Malo, Brest, Toulouse, Perpignan, Montpelier, Marseilles, Golfe-Juan-Valluris, Algiers, &c. That the tube makes an insulator of the first order has been proved by Prof. Paul Janet of the Central Electrical Laboratory. He applied an alternating current, frequency 42 cycles per second, at 80,000 volts in free air to two annular electrodes respectively inside and outside a section of Nedar tube 0·5 m. long, 0·08 m. interior diameter, and 0·02 m. thick. Then, to avoid superficial sparking, the tube was immersed in oil, and the pressure was raised to 110,000 volts. The insulator was not pierced, though at this pressure an arc was struck between the electrodes.

The material of which the tube is made is manufactured in thin sheets, which are rolled upon themselves (enabling any desired thickness to be obtained); the whole being thoroughly impregnated with an insulating binder. The factory is at Toulon, whence tubes are turned-out in useful lengths with spigot and socket joints. The latter are jointed simply by heating, which softens the material. The sizes manufactured go in centimetres from 4 to 15 cm., and larger sizes and specials are made to order.

M. Bachelay claims that Nedar pipes are also useful for positions where protection against corrosion from any sort of gas or acid is necessary; and he pointed out that the material can be supplied in flat sheets for underground boxes, &c. The price is said to be very reasonable.

THE GÉVIR "INJECTOR-DIFFUSER."

This appliance, the invention of M. Verlé (Distribution Engineer of the Lille Gas Company) and M. Guéret, was said by the latter, who described it in a short paper, to be suitable for all kinds of domestic and industrial heating—especially for the bar burners of large fish-fryers, &c. A high efficiency is obtained; the mixture being thorough at all rates and the flames even all along the burner. It will be seen from the cross-section which we reproduce that the shape of the mixing tube differs in its proportions from those of the classic venturi; and its design is the outcome of numerous experiments, and gives, for all injector gas-rates, the minimum of energy loss from friction and turbulence. Particulars of three sizes of the injector-diffuser, and their comparison with the ordinary venturi design, are given in the following table.



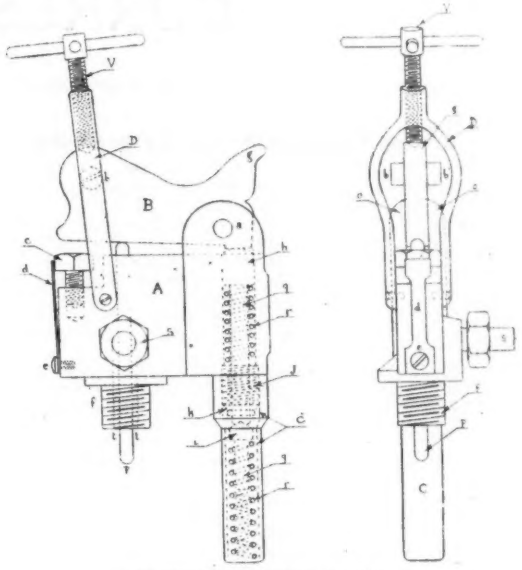
The Gévir Mixer.

Size.	Minimum Consumption per Hour at Pressure:		Maximum Consumption per Hour at Pressure:		Venturi Tube.				Gévir Tube.			
					1st Cone.		2nd Cone.		1st Cone.		2nd Cone.	
	40 Mm.	80 Mm.	40 Mm.	80 Mm.	Diameter.	Length.	Diameter.	Length.	Diameter.	Length.	Diameter.	Length.
	Ltrs.	Ltrs.	Ltrs.	Ltrs.	Mm.	Mm.	Mm.	Mm.	Mm.	Mm.	Mm.	Mm.
1 . .	650	935	995	1410	21	31·5	21	98·5	32	34	20·5	42
2 . .	900	1320	1320	1890	26·6	40	26·6	125	40	43	25·5	52
3 . .	1300	2090	1600	3060	35	52·5	35	164 5	50	54	33 5	66·5

PISTOL FOR BLOWING SERVICES.

Two inspectors of the Marseilles Gas and Electricity Company designed, in 1922, an ingenious little apparatus for clearing services; and M. Léon Caussé described the invention, referring to the drawings which are reproduced here.

The body A of the pistol is attached by means of the screw-threaded spigot *f* to a liquid carbonic acid magazine—of the type manufactured by the St. Etienne Small Arms Company. A port *t* makes communication between the magazine and the outlet S which is jointed to the service pipe under treatment.



CO_2 Pistol for Blowing Services.

A striker *p* is axially placed in the port *t*, and carried through the body A with a good sliding fit, rendered gas-tight by merely oiling. This striker, which acts on the valve of the gas magazine, can be depressed by a trigger B hinged at *a*. The trigger is formed with two lateral projections *b* and a pawl extension *g*; and impulse is given it through the medium of a double rod *qq*^{1} and springs *rr*^{1} in a casing C screwed on to an extension *j* solid with A. The stroke of *p* can be regulated by adjusting the nut *c*, which is locked by a flat spring *d*. A stirrup D mounted upon the body of the pistol and having an operating screw V allows the substitution of steady blowing for shock action in dealing with mere solid obstructions. The shock action is obtained by cocking the pistol by pulling on the projections *b* against the springs *rr*^{1}, which are thereby set; pres-

sure on *g* thereafter causing a sharp emission of gas, which resets the trigger.

M. Caussé says the appliance is hardly more cumbrous than a revolver, and almost as easy to work. Further, it is not costly, for one magazine will furnish as many as 100 workings, and costs 3 francs at Marseilles. The cylinder of compressed air at 150 kg. that can be bought for this money weighs 6·5 kg. and gives less than 50 workings.

COKING AND SWELLING CONSTITUENTS OF COAL.

Paper before the American Chemical Society.

In a paper which he read earlier this year before the Gas and Fuel Chemistry Section of the American Chemical Society, Herr Franz Fischer, of Mülheim, dealt with the coking and swelling constituents of coal. The object of the paper was to show that, with increasing geological age of coals, the relative oily bitumen content of their total bitumen increases, and that the relative content of solid bitumen decreases, while the decomposition point of the solid bitumen rises. The solid bitumen thus changes in the course of time, forming oily bitumen and solid bitumen of higher decomposition point. With this rise in the oily bitumen content, the tendency of the coal to cake and melt increases—reaching its highest degree with coking coals. The solid bitumen, with its higher and higher decomposition point, begins to cause swelling as soon as this decomposition point corresponds with the plastic state of the coal. If one determines, for a given coal, its total bitumen content, the relative solid and oily bitumen contents, and the decomposition point of the solid bitumen, there is available a very much better means of characterizing and classifying coals from the coking standpoint than has previously been the case. When the necessary minimum content of oily bitumen and the maximum permissible quantity of solid bitumen (which may depend upon its decomposition point) have been determined, one will, the author said, no doubt be able to calculate exactly the proportions in which different kinds of coal must be mixed in order to give a useful coke—with the restriction, however, that such mixtures must be of sufficiently small and intimately mixed material.

COMBUSTION OF CARBON.

Some experiments on the combustion of carbon were described by Messrs. Keenen, Prine, and Ebaugh in a paper presented some time ago to the Gas and Fuel Chemistry Section of the American Chemical Society. Continuing work previously reported upon by Messrs. Smith and Ebaugh, an attempt was made to determine the products formed when oxygen impinged upon a single piece of carbon, instead of a number of pieces in a fuel bed. Discussing the results, the authors say it has been shown that, with high temperatures, a relatively poor contact of oxygen with hot carbon for a very short period of time—say, a fiftieth of a second—enables it to appear as carbon monoxide rather than as carbon dioxide. The indication is that carbon monoxide, rather than carbon dioxide, can be viewed as a primary product of combustion at high temperatures. It is, they say, as though the carbon, with its vastly greater "concentration" than the highly-heated gaseous oxygen, had its superficial layers held so loosely at high temperatures that the impact of a gaseous oxygen molecule striking it sufficed to break-off portions of it in quantities required to yield a gas rich in carbon—*i.e.*, carbon monoxide—rather than the one found when conditions are reversed, and an excess of oxygen has a chance to combine with the carbon monoxide already produced. The depth of a fuel bed required to yield carbon monoxide rather than carbon dioxide as a main or sole product will therefore, they conclude, be determined largely by the temperature that can be maintained, and by the intimacy of the contact with oxygen effected. This depth is probably much less than has been assumed by many engineers and chemists.

Polytechnic Courses in Gas Engineering.—For the coming session of the Regent Street Polytechnic, which commences on Sept. 28, courses have been arranged to meet the requirements of those who are, or intend to be, connected with the gas industry, and who are also desirous of obtaining the Certificates awarded by the City and Guilds of London Institute, or the Certificates awarded by the Institution of Gas Engineers. The facilities available at the Polytechnic, for the study of gas manufacture and supply, are excellent, and the training is thorough.

CORRESPONDENCE.

[We are not responsible for opinions expressed by Correspondents.]

Existing Carbonization Practice and Coke.

Sir,—In your Editorial Notes of Aug. 5, you refer to the advice given by Sir Arthur Duckham to coke-oven and gas managers to get together and take counsel with each other. It is perfectly true that their interests have much in common—that is to say, they both produce coke, gas, and various bye-products—but the opportunities for actual co-operation between coke-oven and gas-works are relatively few, and the companies concerned can safely be left to work out their own salvation. You also refer (apparently as a further inducement to their getting together) to the fact that coke ovens are being used, not only for the making of metallurgical coke, but domestic coke, or smokeless fuel.

Now, while this getting together may achieve something, there is, in the writer's opinion, no doubt that neither the coke-oven retort nor the gas-works retort is really suitable for the manufacture of a free-burning smokeless fuel with the maximum recovery of low-temperature oils, such as to-day is envisaged as a solution of many of our industrial troubles. Owing to the construction of these retorts, only high-temperature coke can be economically produced; and while with suitable blending, grinding, and briquetting, high-temperature coke of a free-burning character could be manufactured, the characteristic bye-products of low-temperature carbonization would be lost if coal were carbonized in gas retorts or coke ovens.

To obtain these bye-products, either low-temperature carbonization has to be employed or internally heated retorts must be utilized, producing either a low-temperature product with a certain proportion of volatiles remaining therein, or a high-temperature product rendered free-burning in the manner above described, owing to its physical properties. In the latter case, the utilization of an internally heated retort ensures also the recovery of the low-temperature bye-products. Where gas-works are concerned, a study of the existing and proposed carbonization processes has led the writer to the conclusion that it is in the last direction that they will find a solution to their present difficulties.

A "better" domestic coke will not suffice to-day. Grading and screening of the coke and washing of the coal, with reduction of the ash content of the resulting coke, while possibly enabling gas companies to dispose of their coke stocks and production in the immediate future, will be quite inadequate should supplies of free-burning or low-temperature coke at a reasonable price become available. The opportunity of gas-works, with their existing outlet for gas and selling organization for coke, is clear—and this is a gradual change-over from their present methods of gasification to the most efficient way of producing the really free-burning fuel that can replace coal on the ordinary open English fireplace.

Norman J. Bowater.

40, *Westminster Palace Gardens,*
Victoria Street, S.W. 1,
Aug. 19, 1925.

Tar v. Bitumen.

Sir,—Absence has prevented an earlier reply to Mr. Robinson's second letter on this subject. I am afraid that it is of little use to argue with this gentleman, who seems determined to misunderstand me.

He now implies that I am connected with the bitumen interests, which I deny without qualification. If Mr. Robinson thinks that this is what is politely termed a terminological inexactitude, he is welcome to do so.

I fail entirely to see how the two sentences he quotes are mutually contradictory. They refer to two specific cases in which the facts are well known to me, and are as stated. With regard to my reference to Brooklands, if he cannot see the point of it he must be extremely dense. Not being altogether a fool, I too am aware that none of the proceeds of motor taxation are devoted to the upkeep of the track; my point is that if tar may, as Mr. Robinson seems to consider, be regarded as the perfect surfacing agent, as regards both durability and cost, it is strange that it has not been used by the Brooklands authorities. Of course, this applies equally to bitumen.

I have not admitted that tar is better than bitumen. It may be, or it may not; but I do not see that the question can be settled by *ex parte* statements from either one side or the other. Let Mr. Robinson produce independent evidence in favour of tar, and I shall feel more inclined to listen to him. In any case, I pay a considerable yearly sum in motor taxation for the purpose of having decent roads to drive on, and not for that of bolstering up the gas monopoly, or, for that matter, the tar-distilling "ring."

Motorist.

Aug. 24, 1925.

REGISTER OF PATENTS.

Vertical Retorts.—No. 215,754.

KOPPERS COKE OVEN CO., LTD., of Sheffield (assignees of H. KOPPERS, of Essen-Ruhr).

No. 11,187; May 6, 1924. Convention Date: May 7, 1923.

The patentees remark that in the distillation of gas from fuel with continuous vertical retorts, difficulties arise from the fact that when heated the charge becomes soft and pasty, so that its movement through the distilling chamber is impeded. One method proposed for overcoming this difficulty is to place the zone of highest temperature as close as possible to the mouth of the retort, so that the coal is converted as quickly as possible into solid coke, and the coal has been fed into this maximum temperature zone through a feed tube extending a short distance into the retort, or between rows of "curtain" bricks extending across the top. Practical difficulties in connection with this method arise from the excessive loss of heat by radiation, and inconvenience due to high temperature over the retort.

According to this invention, the maximum temperature zone is placed well below the top of the retort; and in order that between this zone and the top there may be the minimum of risk of the green charge becoming plastic and seizing, the coal is fed right down to the maximum temperature zone through a feed tube which is clear of the retort walls.

Safety Device for Gas and Air Mixing Plants. No. 233,699.

SELAS AKTIEN., of Berlin.

No. 11,637; May 5, 1925. Convention Date: May 10, 1924.

The patentees point out that regulating devices for gas and air have been proposed in which a thermo-couple is provided which projects into the cone of the flame of a bunsen burner in order to regulate the area of the gas and air feed to compensate for variations in the composition of the mixture; but with such means of regulation it is still possible that large variations may occur—for instance, owing to the partial or complete failure of the gas or air supply.

This invention has for its object a safety device which operates in a manner such that if a large alteration takes place in the mixture which is beyond the limits of control of the regulator, the gas and/or air supply are automatically cut off. A body which will burn, fuse, or explode at a certain fairly low temperature—for example, 100° C.—is arranged in the inner flame cone of an auxiliary burner fed by the gas mixture; and on the destruction of this body a rod is released by which the gas or air supply, or both, are cut off.

Prepayment Meters.—No. 236,994.

HANSFORD, J., of Enfield.

No. 9331; April 12, 1924.

This invention relates to prepayment mechanism for coin-freed gas meters and the like of the type described in patent No. 160,514; and the object is to provide an improved mechanism which is constructed and manipulated so that only by the working of the meter can the parts be returned to their normal positions, and one which is a self-contained unit and capable of being removed for inspection and repair and replaced with facility.

The feature of the invention is a locking arm adapted to be displaced so that it locks the crown wheel or the like of the coin chamber when the prepayment shaft has been displaced to the maximum extent; the locking arm being provided with a cam adapted to cause the arm to disengage the crown wheel or the like on the return movement of the prepayment shaft. The locking arm device may be pivotally mounted.

Retort Settings.—No. 237,311.

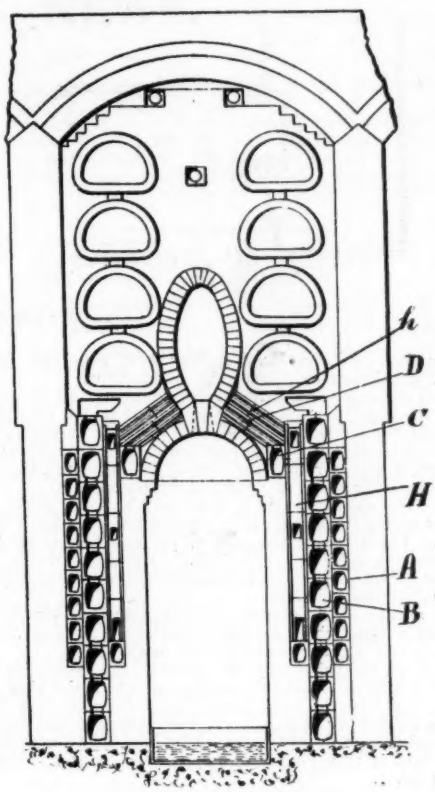
TOOGOOD, H. J., of Elland, CARR, W. M., of Stretford, and DEMPSTER, R., & SONS, LTD., of Elland.

No. 4545; Feb. 22, 1924.

This invention relates to regenerator furnaces used in the manufacture of gas, and has for its chief object to introduce means whereby the present method of heating gas retort or coke oven settings by coke and internal producers can be changed at will to heating any number of such settings by gaseous firing. For this purpose the invention consists in the combination with a regenerator furnace, with its waste gas and secondary air heating passages, of an auxiliary regenerator for pre-heating the gaseous fuel when gas firing or for assisting in pre-heating the secondary air when coke firing; or, of course, the secondary air regenerator may be used periodically for gaseous fuel and the auxiliary regenerator for secondary air, as found best in practice.

In the transverse section which we reproduce A indicates the auxiliary regenerator, which comprises a number of horizontally disposed tubes situated outside the waste heat tubes or passages B and connected by a passage C with outlets D leading to the combustion chamber. H indicates the secondary air tubes, which lead to the combustion chamber by passages *h*.

In working the setting it is proposed that it should be started up under coke firing. It can then be changed on to gaseous firing, either by coal gas or producer gas, at short notice and without any alteration whatever, or vice versa. When gaseous firing is used, it would be necessary of course to close-off the producer. This could be done in many simple ways—for example, a furnace could be built with an arch inclining from the top of the producer arch into



Toogood & Carr's Regenerator Setting for Gas or Coke Firing.

proximity to the rear wall of the furnace; the space between such parts being closed when required by a damper which could be operated by a long rod. This would work equally well in conjunction with coke firing, or gas firing; movable tiles being used for closing the nostrils in the combustion chamber arch. The simplest and most practical way would be simply to charge the fire with breeze, close the primary airslides or doors, and pass over on to gaseous firing. The breeze will gradually smoulder away, and leave the furnace fully ashed up, which, on rekindling the fire when passing back to coke firing, could be simply raked out.

When the setting is being coke fired, the auxiliary regenerator A can be used for pre-heating a portion of the secondary air; the ordinary regenerator pre-heating the remainder, or the two regenerators may work in series upon the secondary air. When the setting is heated with coal gas, the auxiliary regenerator A can be used for pre-heating such gas, which is burned with the secondary air from the ordinary regenerator. In using up coke breeze which arises from coke screening and handling, a breeze forced-draught outside producer could be installed, and the cooled producer gas pre-heated in the auxiliary regenerator and efficiently burned with secondary air from the ordinary regenerator to heat the settings. Cold and low-quality gases, or water gas from mechanical bye-product recovery producers, can also be pre-heated in the auxiliary regenerator and burned with pre-heated secondary air from the ordinary regenerator to maintain efficiently the high carbonizing temperatures required.

The invention, say the patentees, can be applied to settings for vertical retorts as well as to settings for horizontal retorts and coke ovens. Further, it enables the gas engineer for a given demand for town gas to increase his residuals and thus get a controlling influence in the residual market, to increase his efficiency of working, and to reduce the cost of the therm.

Connecting Retort Mouthpieces and Standpipes. No. 237,111.

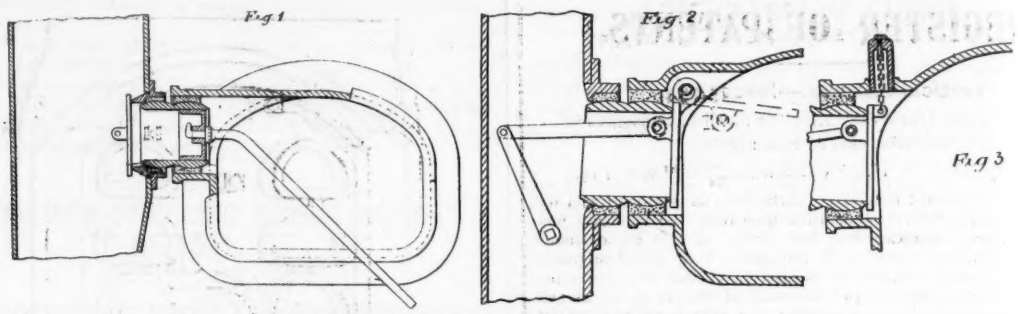
ALDRIDGE & RANKEN, LTD., of Victoria Street, S.W. 1, and BEAVAN, T. A., of Bath.

No. 19,252; Aug. 13, 1924.

According to this invention, relating particularly to cases where a single standpipe is connected with several retorts in a more or less vertical row, the connecting pipe arranged between each mouthpiece and the standpipe is provided with spherical ends to form ball joints; the virtual centres of the spherical ends being located so as to allow of any desired range of movement in the setting. The connecting pipe is closed during the charging of a retort, to prevent coal from entering the standpipe or the passage of air or gas through the connection, by a valve or a removable plug.

We reproduce drawings of three forms of the invention.

The spaces between the different connecting pipes and the branch sockets are filled with the usual mixture of jointing material, which conforms to the shape of the spherical ends. Each socket on the standpipe may be formed with a valve face or seating projecting inside the standpipe, against which a valve is moved in any suitable manner, and projections [shown dotted in fig. 1] may also be provided on the interior of the sockets for the engagement of a lug fixed on one of the spherical ends of the connecting pipe to prevent



Standpipe and Mouthpiece.—Aldridge & Ranken, Ltd.

endwise motion; suitable locating fins being also cast inside the sockets for positioning the connecting pipe therein.

In the arrangement of isolating valve shown in fig. 2, a pocket is formed in the upper part of the branch socket of the mouthpiece, to accommodate the hinge lugs of a valve pivotally suspended from a pin. The apertures of the hinge lugs are preferably made, as shown, of much larger diameter than the part of the pin which the lugs engage, which part is made of square cross-section from an otherwise round pin. The object of this is to scrape the bores of the lugs as the valve is moved to clear them of deposits and keep the valve loose on its pin. The same construction of pin and hole is used at the joint between the valve and valve rod. The pin is driven tight in drilled holes in the mouthpiece, and is provided with a tommy-hole in its head to facilitate removal.

In fig. 3 an alternative method of suspending the valve is shown, consisting of a short chain hanging in a small housing formed of a casting screwed into an opening in the mouthpiece.

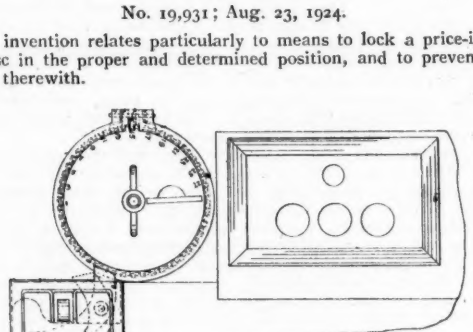
In some cases the valve may be replaced by a removable closing plug provided with a detachable handle, by which the plug can be inserted directly into the end of the pipe. The plug may be solid and slightly tapered, or of thin metal with sufficient resilience to retain it in position, or it may be an expanding plug actuated by the detachable handle, or a plug with an asbestos covering. One form is shown in fig. 1.

Prepayment Meters.—No. 237,114.

Meters, Limited, of Manchester, Orme, T. A., and Stansfield, A., both of Oldham.

No. 19,931; Aug. 23, 1924.

This invention relates particularly to means to lock a price-indicating disc in the proper and determined position, and to prevent tampering therewith.



Locking the Price Changer of a Prepayment Meter.—Meters, Limited.

It will be understood from the drawing that this is accomplished by means of a flanged ring or annular frame hinged to the outer casing of the meter in such a position that when the frame is turned up it is clear of the disc, which can then be rotated to any desired position, but when turned down the frame will enclose the periphery of the disc. The hinged frame has a locking tooth which is adapted to enter a notch of the disc and so prevent its rotation.

A convenient arrangement for this purpose is provided by a slotted bearing for the hinge pin of the frame, which has two lugs, one being disposed at each side of the bearing. Centrally mounted between these lugs is a tooth secured to the frame and disposed within the slot in the bearing. When the frame is turned up, the locking tooth is carried therewith, and the price-indicating disc is freed.

A convenient method of locking the frame (which may, however, be varied if desired) is by the provision of a lever pivoted to the meter casing, which lever can be turned on its pivot so that one end is brought to bear against the hinged frame. The locking lever is so disposed that access to it can only be had when the coin receptacle is removed; the lever being normally covered, and the coin receptacle secured to the meter by a padlock or other device.

Gasholders.—No. 237,504.

Nielsen, H., of Muswell Hill, N. 10, Smith-Rewse, H. S., of Cannon Street, E.C. 4, and The Wheesoe Foundry and Engineering Co., Ltd., of Darlington.

No. 1084; Aug. 11, 1924.

The object of the invention, which relates to a type of "dry" gasholder, is to obviate the necessity of a steel bottom to the holder. To this end the usual drain pocket or cup at the base of the container is made of a depth to form, with a foundation, an inner receptacle to receive a liquid whereby the foundation will be rendered impervious to the gas. This inner receptacle may communicate with the atmosphere outside the holder by means of a suitable channel.

APPLICATIONS FOR PATENTS.

[Extracted from the "Official Journal" for Aug. 19.]

Nos. 20,016-20,558.

Bowers, F.—"Gas taps of pendants, &c." No. 20,335.
Brégeat, J. H.—"Purifying, &c., gaseous mixtures." No. 20,463.
Grainger, J. E.—"Combined gas cooker and water boiler." No. 20,130.
Henshaw, D. M., and W. C. Holmes & Co., Ltd.—"Gas purification." No. 20,472.
Liese, H.—"Regulating device for measuring pressures of gases, &c." No. 20,078.
Nicholl, G.—"Gas pressure regulator." No. 20,411.
Pepper, B., Pepper, C. E., and Pepper, J.—"Gas toaster, &c." No. 20,228.
Reeves, J. H.—"Tanks, &c., for liquid and gas supply systems, &c." No. 20,039.
Simpson, S.—"Prepayment gas meters." No. 20,505.
Singleton, C. E.—"Gas stoves." No. 20,263.
Soc. Anon. d'Exploitation des Brevets Cousin dite Le Chauffage Industriel.—"Air-blast device for semi-water gas producers." No. 20,483.
Townson, T. R.—See Bowers, F. No. 20,335.
Townson & Coxson.—See Bowers, F. No. 20,335.
Umpleby, F.—"Gas generators." No. 20,511.
Watson, S. G.—See Henshaw, D. M., and W. C. Holmes & Co., Ltd. No. 20,472.

Carbon Products, Ltd., has been registered as a private Company, with a nominal capital of £10,000, in 1s. shares, to carry on business as manufacturers of, or dealers in, any products made from carbon, &c.

Taunton Gas Light and Coke Company.—The Directors report for the year ended June 30 shows that the gas sent out during the year was 190 million c.ft.—an estimated increase of 10 p.ct. Dividends are recommended as follows: On the 1897 preference stock, 5 p.ct.; on the 1920 redeemable preference stock, 7 p.ct.; on the consolidated "A" stock, 9 p.ct.; on the yellow shares, 7⅞ p.ct.; and on the new (1897) ordinary stock, 7⅞ p.ct.

Bridport Gas Company, Ltd.—It was reported by the Directors at the meeting of the Company last week that during the year ended June 30 the business steadily progressed; the gas sales having now reached nearly 45 million c.ft. per annum. After placing £100 to reserve and £100 to depreciation of meters, dividends were declared at the rates of 5 p.ct. on the "A" preference shares, 6¼ p.ct. on the "B" cumulative preference shares, and 10 p.ct. on the ordinary shares, less tax.

Tar on Roads.—In a letter to "The Times" on Monday last, Mr. Arthur S. Collins, Past President of the Institution of Municipal and County Engineers, states that any annoyance from the tar in Kensington Gardens probably—like most complaints—arises from the use of improper tar or unskilled labour. Granted efficient tar and labour, he says, the use of tar in road-making and maintenance is economical and satisfactory. In the present state of trade it is especially important that prejudice be not created against the greatest possible use of home productions, in which tar takes a prominent place.

Leatherhead Gas and Lighting Company.—For the year ended June 30, the Directors recommend a further dividend of 3½ p.ct., making, with the interim dividend of 2½ p.ct. already paid, 6 p.ct. (less tax). This will leave a sum of £1150 to be carried forward. A decrease in profits is due principally to two causes—a reduction in the price of gas and a serious drop in the value of residuals. They accordingly notify an increase in the price of gas at September next from 12·8d. to 14d. per therm. The sale of gas shows an increase of 34,082 therms. The Directors, in their report express regret that, owing to ill-health, their valued colleague, Mr. F. S. Cripps, has resigned his seat on the Board. It is intended to apply for a Special Order authorizing the raising of additional capital and bringing the Company's powers up to date in various respects.

MISCELLANEOUS NEWS.

COLCHESTER GAS COMPANY.

At the half-yearly meeting of the Company on Aug. 21—the Chairman, Ald. W. Gurney Benham presiding—the revenue account for the half-year ended June 30, 1925, showed receipts from the sale of gas amounting to £25,108, as against £24,436 for the corresponding half-year of 1924, and a profit balance of £6133, as against £5910.

The CHAIRMAN, in moving the adoption of the report and balance-sheet, said that the results for the half-year had turned out better than had been anticipated. The slump in the value of residuals—coke, tar, and sulphate of ammonia—had affected all gas companies adversely, and the revenue from this source was down to £9051, a reduction of £2511. This was a serious reduction, and the next half-year would show a further falling-off as contracts ran out. Against this loss of revenue there had been a saving of £1364 on coal; and the coal contracts which commenced in July would show a further reduction. Sales of gas had still further increased, producing £670 more. The revenue from meters and stoves also showed a steady increase, illustrating the continued expansion of business. Expenditure had been less in several directions, notably in repairs of mains; and the final result, after writing-off no less than £2925 for depreciation, showed a gross profit of £6133 on the half-year. During the past half-year the Special Order applied for by the Company had passed unopposed through all its stages in Parliament. This had given the Company ample powers in reference to additional capital and other matters.

The report and balance-sheet were unanimously adopted, and the usual dividends were declared—namely, 6 p.ct. per annum on the preference stock; £6 7s. 6d. p.ct. for the half-year on the "A" shares; and £4 9s. 3d. p.ct. for the half-year on the "B" shares.

NEWTOWNARDS GAS PLANT ARBITRATION.

Award of the Umpire.

At a special meeting of the Newtownards (Co. Down) Town Council reference was made to protracted litigation and an arbitration in London and elsewhere in connection with a gas plant installation over which difficulties arose between the Council and Messrs. Perry & Co. (Bow), Ltd. The Arbitrators disagreed, and the ultimate decision was cast upon the Umpire (Sir Richard Paget), who announced that he had made his award, which could be taken up on payment of expenses amounting to £1243. The Clerk informed the Council that, from particulars submitted to him by Mr. J. M'Kee (their Solicitor), the other costs brought the sum up to £2593. This sum did not, however, include Mr. M'Kee's own bill of costs. Mr. M'Cutcheon, in proposing that a cheque be forwarded to Mr. M'Kee for the amount stated, said that, as they had pursued the matter so far, he thought they would have to go on to the bitter end.

Subsequently the award was received, and the reading of it at another special meeting of the Council occupied an hour and five minutes. The preliminary pages dealt with the various sittings of the Court of Arbitration, and the evidence that had been tendered, and referred to the tests carried out on the plant in Newtownards, and the numerous letters that had passed between the parties. Sir Richard stated three cases, a summary of which is:

> In the first case, the Umpire stated that, if he was entitled to read the letters that passed between the parties as explanatory of the contract, he awarded all the money paid by the Council (£10,775) back to them, with 5 p.ct. interest from the date of the various payments to the date of the award; the respondents to remove the plant from the Newtownards Gas-Works, and to leave the premises as they found them.
>
> In the second case, he held that, if the claimants were entitled to rely on the skill and knowledge of Messrs. Perry & Co., they were entitled to the same amount as in the first case; the respondents to remove the plant, and to leave the place as they found it.
>
> In the third case, he stated that, if the letters were inadmissible and the Council were not entitled to rely on the skill and knowledge of the respondents, he awarded respondents the balance of the contract money—£2242.

These three alternatives are being submitted to the Court for final judgment.

MESSRS. PARKINSON AND W. & B. COWAN'S ACCOUNTS.

Advantage of a Diversity of Operations.

From the report of the Directors of Parkinson and W. & B. Cowan, Ltd., on the accounts for the year ended March 31 last, we observe it is proposed to recommend the payment of a final dividend on the ordinary shares of 5½ p.ct., making with the interim dividend of 2½ p.ct. already paid, 8 p.ct., less income-tax, for the year.

The report states that during the second half of the year there was keen competition in the gas meter industry which materially affected the profits of the gas meter side of the Company's business, but that the usual rate of dividend has been maintained through increased revenue derived from the Company's other operations.

The accounts show that 100,000 £1 preference shares and 50,000 £1 ordinary shares were issued last March; making the total issued capital of the Company £786,462, in addition to £199,100 debenture capital. After paying the dividend recommended, the amount carried forward will be £12,442.

The Cowan side of the business celebrates its centenary this year; the Parkinson side having reached that stage in 1916. To mark the double event, the shareholders will be asked to vote a sum of £5000 from the reserve fund to form the nucleus of a permanent benevolent fund for the benefit of the employees of Parkinson and Cowan (Gas Meters), Ltd.

COATBRIDGE GAS COMPANY.

At the Annual General Meeting of the shareholders of the Coatbridge Gas Company, Mr. A. S. Legat, the Chairman, presided. The Directors' report showed that the sales of gas for the twelve months amounted to 1,287,503 therms—an increase of 30,270 therms, or 2·4 p.ct., compared with the previous year. Owing to the fall in value of residual products and the increase of rates and taxes, the Directors were compelled to increase the gas rate to 8·4d. per therm as from April 1. The Directors recommend the payment of dividends at the same rate as last year—viz., £14 5s. p.ct. per annum on the original stock, and £9 19s. 6d. p.ct. per annum on the four issues of £10 shares, all less income-tax.

The Chairman, in moving the adoption of the report, remarked that the statement of accounts was satisfactory, considering the adverse conditions. Owing to the unexpected amount of unemployment in the district, and the consequent scarcity of money, their sales of gas had not increased as they certainly would have done had the state of trade been anything like normal. In comparison with the previous year, the increase of sales was only 2·4 p.ct., while they had anticipated 8 or 9 p.ct. The price of coal had kept high, being 22s. 6d. per ton, as compared with 13s. 9d. ten years ago; and wages were about 100 p.ct. above those of ten years ago. Rates and taxes in the last ten years had increased by 350 p.ct., and from what they heard, rates were more likely to increase further than to decrease. Residuals, with the exception of coke, had done badly for them. A considerably larger quantity of tar had yielded £3500 less than the previous year. The price for sulphate of ammonia had also fallen recently. Due to these circumstances, which they could not well foresee, the Directors were forced to raise the price of gas during the year; but their price, notwithstanding, still compared very favourably with those of their neighbourhood, and, indeed, with the prices throughout Scotland. They hoped to get through the next year with the price of gas at least no higher, having bought coal at a considerable reduction on last year's price. Against this, however, they were meantime faced with a slump in the price obtained for coke. The new installation of retorts continued to give every satisfaction.

Mr. Robert Waterston, J.P., seconded the adoption of the report and payment of the dividends as recommended; and this was agreed to.

WORTHING GAS COMPANY.

The Half-Yearly Meeting of the Company was held on Aug. 22—Alderman J. G. DENTON, J.P. (Deputy Chairman), presiding.

The DEPUTY CHAIRMAN said that since the last half-yearly meeting they had raised another £12,500; and it showed the stability of the Company in that they were able to raise the money at 5½ p.ct., and make a premium upon it. The increase in the sale of gas was very satisfactory. They had made £1217 more than in the last half-year. In the half-year ended June, 1914, they sold 86,325,000 c.ft., whereas in the last half-year the sales amounted to 143,715,000 c.ft.—an increase of 66 p.ct. In 1914 the capital charge per million c.ft. was £757. To-day it was £711. Co-partnership had cost £110 more than in the previous half-year—brought about by their having more co-partners, and the fact that they were now on a higher dividend of 4 p.ct., as against an earlier one of £3 12s. 6d. p.ct. There were 99 co-partnership agreements in force. The sales of residuals had largely affected the balance-sheet. Coke had come out remarkably well, but tar was down by £900. They had carried £8304 to the profit and loss account. The Deputy Chairman then referred to the gas exhibition held in the Rivoli Hall in April last. He said it was a great success. In the last four weeks they had sold between £800 and £900 worth of fittings, &c. At present they were selling gas at 11⅜d. per therm; and it was the intention of the Directors to reduce that price, as from the Michaelmas readings, to 11d. per therm.

The report and statement of accounts were adopted.

Lieut.-Colonel Sir CHARLES MORGAN then moved that dividends of 5½ p.ct. per annum on the preference stock and 6½ p.ct. on the consolidated ordinary stock be declared for the half-year.

The DEPUTY CHAIRMAN moved a vote of thanks to their officers, staff, and workmen.

Mr. S. O. STEPHENSON (the Engineer and General Manager), replying, said he thought that the co-partnership scheme had a great deal to do with the excellent results.

Hereford Gas-Works Accounts.—The accounts of the Hereford gas undertaking were presented to a recent meeting of the City Council, when Alderman Witts, in proposing the adoption of the report, said there were several outstanding features. In the first place, the income from gas supplies was much greater than in 1924. In the second place, the profit and loss account showed a profit of £2150 more than in the previous year. There was an increased manufacture of 12½ million c.ft. of gas. There was at the gas-works property worth some £200,000 at least, and the liability upon this was £52,000. The report was adopted.

GAS REGULATION ACT ORDERS.

We have received from the Director of Gas Administration a copy of the following Order made by the Board of Trade under section 1:

Finedon Gas Company, Ltd.

After the declared date, the maximum price in respect of gas supplied by the undertakers shall be 15d. per therm; and this price shall be substituted for the price of 4s. 9d. per 1000 c.ft. wherever it is mentioned in section 24 (price of gas) of the Finedon Gas Order, 1904, as confirmed by the Gas Orders Confirmation (No. 1) Act, 1904.

After the declared date, "therm" shall be substituted for "1000 c.ft." in paragraph (2) of Schedule B to the Finedon Gas Order, 1904, and the words "fifth of a penny" shall be substituted for the word "penny" wherever it occurs in that paragraph. (Aug. 18.)

AIRDRIE CORPORATION GAS SUPPLY.

The annual report to the Corporation of Airdrie by Mr. A. Kelloch, Gas Engineer and Manager, shows that the amount of gas made during the past year was 139,859,000 c.ft.—an increase of 2,795,000 c.ft. The total quantity sold was 133,969,000 c.ft.—an increase of 2,864,000 c.ft., or 2·18 p.ct., compared with the preceding year. Both ordinary and prepayment meters showed an increase, while industrial meters consumed 14,021,000—an increase of 325,500 c.ft., or 2·37 p.ct. The unaccounted-for gas amounted to 4·21 p.ct., as compared with 4·38 p.ct. during the previous year. The total income on the undertaking was £36,103—an increase of £72. The gross income from residuals and bye-products was £6611, as against £5835 for the previous year; and after deducting the cost of handling and manufacture, the net income from this source amounted to £4796—a decrease of £235. The decrease is due to the slump in tar products. The total expenditure under net renewal account was £8087, a decrease of £513. The amount at the credit of the net revenue account being £8350 (including a credit balance of £293 brought forward from last year), and the total charges being £8087, a credit balance of £262 is carried forward to next year.

NORTH-EAST COAST COAL TRADE.

From our Own Correspondent.

The market has undergone no change during the past week, and the absence of demand is causing much difficulty. Collieries are having a great struggle to keep working, even at the reduced prices.

As was to be expected, August has proved a very bad month. Many consumers took in extra coal in July in anticipation of a stoppage; and this, with the heavy stocks which were already held, has reduced the demand to exceedingly small proportions. Another factor has been the general impression that the subsidy would enable collieries to sell at almost "any price," which has led some buyers to hold off. This policy has been to some extent justified, because prices have come steadily down ever since the end of the crisis. But sellers have begun to take a firmer stand, and there is a feeling of some hope that bottom may have been reached, and that the present level of prices may begin to attract business next month.

Nominal prices for gas coals are 18s. for Wear Specials, and 17s. 6d. for best qualities. Seconds are about 14s. 6d. to 15s., which is the price also of Durham unscreened coking makes.

COAL TRADE IN THE MIDLANDS.

From our Local Correspondent.

Buyers remain unresponsive in the Midland area. There is little promise of any re-animation of the market till diminishing stocks and larger consumption combine to bring industrialists and householders on to the market again. Contractors are in a dilemma over the considerable quantities of gas coal that are being thrown on their hands through notifications from various undertakings that they are unable to accept delivery for the present. This is the aftermath, of course, of the over-stocking which took place when a fight in the coalfields seemed imminent. Many undertakings are inconveniently crowded with stocks which they are anxious to reduce, and those that have hired additional storage accommodation naturally aim at relieving themselves of this extra charge as quickly as possible. Spot lots of gas coal are being offered at prices far below the contract rates, but openings for them are exceedingly difficult to find. There is no change in the prices of household coals. Some of the collieries would be very glad to ease the congestion which is arising in regard to common grades of industrial fuel, and are quoting lower prices as an inducement. Coke is unsaleable on anything like a normal basis. Blast-furnace supplies are being offered down to about 11s. at ovens. Most pits are working with fair regularity; and the output exceeds the current volume of demand. Colliery stocks had, however, fallen low; and though the market is unbalanced just now, equilibrium will be recovered before very long if the general trade picks up as it is expected to do next month.

YORKSHIRE AND LANCASHIRE COAL TRADE.

From our Local Correspondent.

The situation this week shows that the coal trade is suffering from the activity which prevailed during the last few weeks of July prior to the threatened stoppage, and the stock accumulated during that period, coupled with the textile strike, is causing some anxiety in regard to the work of collieries.

Industrial consumers naturally prefer to use up their stocks, and their regular weekly orders have, therefore, to be curtailed. The local holidays in various large consuming centres have also to be taken into account. These have been extended in the majority of cases this year.

The iron and steel trades show no sign of improvement; while the lack of export orders for house coal and the natural lull in this direction at home contribute to the fact that pits are generally working not more than three days per week.

Gas coals are moving slowly, the majority of the works having purchased their requirements for twelve months. The present situation is likely to continue for some little time unless an unforeseen alteration takes place.

Humber bunker and export prices (f.o.b. usual shipping ports) are as follows: South Yorkshire—Hards, Association, 18s. 6d. to 18s. 7½d. per ton; screened gas coal, 18s.; washed trebles, 17s. to 17s. 6d.; washed doubles, 15s. 6d. to 16s. 6d.; washed singles, 14s. 9d. to 15s.; washed smalls, 11s. 3d. to 11s. 6d.; unwashed doubles, 15s.; rough slack, 10s. 3d. to 10s. 6d.; and smithy peas, 17s. to 18s. West Yorkshire—Hartleys, 17s. to 17s. 6d.; screened gas coal, 17s. to 17s. 6d.; washed trebles, 17s.; washed doubles, 15s. to 15s. 6d.; washed singles, 13s. 6d. to 14s. 6d.; washed smalls, 11s. to 12s. 6d.; unwashed trebles, 16s. 6d.; unwashed doubles, 12s. to 13s.; rough slack, 10s. 6d. to 11s.; and coking smalls, 10s. Derbyshire and Nottinghamshire—top hards, 19s. 3d. to 20s. 6d.; washed doubles, 15s. to 16s.; washed singles, 14s. to 15s.; washed smalls, 11s. to 12s.; unwashed doubles, 13s. 6d. to 14s.; and rough slack, 10s. 6d. Yorkshire, Derbyshire, Notts.—Screened steam coal, 14s. 6d. to 17s.; gas coke, 18s. to 22s.; and furnace coke, 17s. 3d. to 17s. 9d.

CURRENT SALES OF GAS PRODUCTS.

The London Market for Tar, Tar Products, and Sulphate.

The recent wet weather has caused a slackening in the demand for tar for road work, although fair quantities still continue to be sent out.

A certain amount of business is reported in pitch, and the market is steady at 40s. to 42s. 6d. net per ton.

Creosote is quietly steady at about 6¼d. to 6⅝d. net per gallon.

Tar spirits are in demand, and prices are firm; pure benzole and pure toluole being 2s. 1d. to 2s. 2d. net per gallon, and 95/160 solvent naphtha 1s. 9d. net per gallon.

Tar Products in the Provinces.

Aug. 24.

The markets for tar products continue dull, and little business of importance is passing.

Pitch is still quiet. Some business is reported to have been done at 38s. f.o.b. United Kingdom ports; but the majority of manufacturers are still asking 40s. So far as the Continental consumers are concerned, they appear to be covered for their immediate requirements, and prefer to wait before purchasing any further quantity.

The creosote market remains steady; but a little business has been done for delivery to the end of the year at rather lower prices than have been ruling recently.

Water-white products are still firm, and the demand for solvent naphtha continues.

The average values for gas-works products during last week were: Gas-works coal tar, 25s. to 30s. Pitch East Coast, 37s. 6d. to 38s. 6d. West Coast—Manchester, 32s. 6d. to 33s. 6d.; Liverpool, 33s. 6d. to 34s. 6d. Clyde, 36s. 6d. to 37s. 6d. Benzole, 90 p.ct., North, 1s. 7½d. to 1s. 8¼d.; crude, 65 p.ct., at 120° C., 1s. to 1s. 1d., naked at makers' works; 50-90 p.ct., naked, North, 1s. 7½d. to 1s. 8¼d. Toluole, naked, North, 1s. 6½d. to 1s. 7½d., nominal. Coal-tar crude naphtha, in bulk, North, 7½d. to 8¼d. Solvent naphtha, naked, North, 1s. 4½d. to 1s. 6d. Heavy naphtha, North, 1s. to 1s. 2d. Creosote, in bulk, North, liquid, 5⅝d. to 5⅞d.; salty, 5¼d. to 5⅝d.; Scotland, 5⅜d. to 5⅝d. Heavy oils, in bulk, North, 6¼d. to 6½d. Carbolic acid, 1s. 4d. to 1s. 5d. prompt. Naphthalene, £11 to £14; salts, £4 to £5, bags included. Anthracene, "A" quality, 2½d. per minimum 40 p.ct., purely nominal; "B" quality unsaleable.

TRADE NOTES.

Tar Dehydration Plant for Keith.

The Keith Gas Light Company, Ltd., on the recommendation of their Engineer, Mr. H. A. Rutherford, have placed an order with the Woodall-Duckham Vertical Retort and Oven Construction Company (1920), Ltd., for a tar dehydration plant having a capacity of 60 to 80 gallons per hour.

CONTRACTS OPEN.

Tar.

The Gas Department of the County Borough of Blackpool are inviting tenders for the surplus tar produced at their works. [See advert. on p. 503.]

Final Examination in Gasfitting, 1925.—Charles Francis Thear, who took the City and Guilds of London Institute final examination in Gasfitting this year at the Westminster Technical Institute, has been placed in the first-class list of successful candidates. Other names in the pass list will be found on p. 238 of the "Journal" for July 22.

STOCK MARKET REPORT.

WHILE holiday conditions still existed on the Stock Exchange last week, there were indications of increasing activity in most of the markets. Throughout the week gilt-edged stocks were in demand; the possibility of a further reduction, which did not mature, in the Bank Rate doubtless contributing to this. The international outlook was also more favourable. Belgium's settlement with America with regard to the payment of her war-time debts is expected to bring about other similar arrangements. Foreign Bonds received more attention, particularly the high-yielding Brazilian Government Bonds; and if the efforts now being made to place the finances of that country on a sound basis are successful, they are, at present prices, exceedingly attractive.

There was decidedly less business in Industrials. Both the two most popular shares, Courtaulds and Imperial Tobaccos, eased off on profit-taking. Dunlops improved. In the motor group, Singers went ahead on the dividend and bonus announcements.

Issue.	Share.	When ex-Dividend.	Dividends. Prev. Hf.Yr.	Dividends. Last Hf. Yr.	NAME.	Quotations. Aug. 21.	Rise + or Fall — on Week.	Transactions Lowest and Highest Prices.
£			%p.a.	%p.a.				
171,978	Stk.	Aug. 13	5	5	Aldershot 5 p.c. max. C.	75—76*	..	..
295,492	,,	,,	4	4	Do. 4 p.c. Pref.	69—74*	..	..
1,551,868	,,	Apl. 2	6½	6½	Alliance & Dublin Ord.	63—65	..	71—71½
574,000	,,	July 9	4	4	Do. 4 p.c. Deb.	60—65	..	63½—64½
300,000	1	May 7	1/7⅛	1/7⅛	Bombay, Ltd.	½—1	..	..
170,000	10	Aug. 13	8½	8½	Bournemouth 5 p.c.	12—13*	..	18/3—19/3
425,050	10	,,	7	7	Do. B 7 p.c..	12—12½*	..	£12/6/9
150,000	10	,,	6	6	Do. Pref. 6 p.c..	11—12*	..	11½—11¾
50,000	Stk.	June 25	3	3	Do. 3 p.c. Deb..	56—59	..	..
162,025	,,	,,	4	4	Do. 4 p.c. Deb..	77—80	..	78½
992,045	,,	July 9	6 3/10	6 3/10	Brentford A Con.	93—98	..	93—95½
900,500	,,	,,	6½	6½	Do. B New	93—98	..	..
76,000	,,	,,	5	5	Do. 5 p.c. Pref.	95—98	+2	..
306,690	,,	June 11	4	4	Do. 4 p.c. Deb.	75—80	..	80
181,337	,,	,,	6	6	Do. 6 p.c. Rich. Red. Deb.	100—105	..	..
214,740	,,	Mar. 5	11½	12½	Brighton & Hove Orig.	165—170	..	..
244,300	,,	,,	8½	9½	Do. A Ord.	122—125	..	..
1,887,500	,,	July 23	5	5	Bristol 5 p.c. max.	89—91a	..	..
855,000	,,	Mar. 19	8	7	British Ord.	105—110	..	109
100,000	,,	June 25	7	7	Do. 7 p.c. Pref.	120—125	..	..
180,000	,,	,,	4	4	Do. 4 p.c. Red. Deb.	71—76	..	..
100,000	10	May 21	6	8	Cape Town, Ltd.	6½—7½	..	7½
100,000	10	Apl. 23	4½	4½	Do. 4½ p.c. Pref.	5½—6½	..	6
150,000	Stk.	June 25	4½	4½	Do. 4½ p.c. Deb.	69—74	..	..
626,860	,,	July 23	6	6	Cardiff Con. Ord.	98—101	..	..
237,860	,,	June 25	7½	7½	Do. 7½ p.c. Red. Deb.	101—104	..	..
157,150	,,	Aug. 13	6½	5	Chester 5 p.c. Ord.	88—93b*	..	..
1,513,280	,,	July 23	5/14/8	5½	Commercial 4 p.c. Cap.	80—85	..	80—82
560,000	,,	,,	5⅜	5/3/4	Do. 3½ p.c. Cap.	80—85	..	80
475,000	,,	June 11	3	3	Do. 3 p.c. Deb.	56—59	..	57
800,000	,,	14 Jan. 15	—	—	Continental Union, Ltd.	35—40	..	39
200,000	,,	June 11	7	7	Do. 7 p.c. Pref.	88—91	..	90
660,000	,,	Aug. 13	6½	6½	Croydon sliding scale	96—100*	..	97—97½
284,975	,,	,,	5	5	Do. max. div.	81—84*	..	..
492,270	,,	Aug. 13	9	6	Derby Con.	107—109c*	..	..
55,000	,,	Jan. 8	4	4	Do. Deb.	74—76c	..	..
1,002,180	10	July 23	4	6	European, Ltd.	6½—7½	..	6½—7 5/16
16,460,070	Stk	Aug. 13	5½	5½	Gas Light & Coke 4 p.c. Ord.	80—82*	..	80—81
3,600,000	,,	,,	3½	3½	Do. 3½ p.c. max.	60—63*	..	61½
4,062,235	,,	,,	4	4	Do. 4 p.c. Con. Pref.	77—80*	+1	77½—77½
4,761,930	,,	June 11	3	3	Do. 3 p.c. Con. Deb.	58—61	..	59½—60½
130,000	,,	—	10	10	Do. 10 p.c. Bonds	..	..	..
42,000	,,	—	7½	7½	Do. 7½ p.c. Ilford Deb.	..	..	..
82,500	,,	Mar. 19	6½	6½	Hastings & St. L. 5 p.c. Conv.	92—97	..	93½—94½
258,740	,,	,,	5½	5½	Do. 3½ p.c. Conv.	73—78	..	73½—76
70,000	10	May 7	10	10	Hongkong & China, Ltd.	17½—18½	..	..
86,600	Stk.	Aug. 13	10	10	Hornsey 7 p.c.	132—137*	..	..
1,976,000	,,	May 21	10	59	Imperial Continental Cap..	140—145	..	143—150
226,170	,,	Aug. 13	3½	3½	Do. 3½ p.c. Red. Deb.	70—73*	..	..
235,242	,,	Aug. 13	6½	6½	Lea Bridge 5 p.c. Ord..	94—99*	..	..
2,127,340	,,	Aug. 13	5½	5½	Liverpool 5 p.c. Ord.	82½—83½b	—½	82½—83
600,000	,,	Mar. 19	7	7	Do. 7 p.c. Red. Pref.	104—106b	+1	104½—105½
165,736	,,	Feb. 19	9	8	Maidstone 5 p.c. Cap.	122—132	..	..
63,480	,,	June 25	3	3	Do. 3 p.c. Deb.	55—60	..	..
75,000	5	June 25	5	7	Malta & Mediterranean	4—4½	..	..
541,920	Stk.	June 11	4	4	Montevideo, Ltd.	65—69	..	66½—67
2,061,315	,,	Aug. 13	5	5	Newcastle & Gateshead Con.	72—74d*	..	..
300,929	,,	,,	4	4	Do. 4 p.c. Pref..	75½—76½d*	..	..
329,705	,,	June 2	3½	3½	Do. 3½ p.c. Deb.	06—68d	..	..
15,000	,,	Mar. 5	11	12	North Middlesex 10 p.c.	..	..	..
75,940	,,	,,	7 7/10	8⅔	Do. 7 p.c.	..	..	..
300,000	Stk.	May 7	9	7	Oriental, Ltd.	100—105	..	..
188,120	,,	June 25	7½	7½	Plym'th & Ston'house 5 p.c.	108—113	..	..
60,000	50	Mar. 5	13	14	Portsea Island B	96—99	..	..
100,000	50	,,	12	13	Do. C	93—98	..	..
4,289,909	1	—	—	—	Primitiva Ord.	8/9—9/9	..	9/- —9/4½
302,600	100	June 2	4	4	Do. 4 p.c. Red. Deb.	78—80	..	79½—80
600,000	Stk.	July 23	4	4	Do. 4 p.c. Red. Deb. 1911	62—64	..	..
193,744	,,	June 25	4	4	Do. B. Aires 4 p.c. Rd. Db.	63—65	..	..
264,496	,,	,,	4	4	Do. R'r P'te 4 p.c. Rd. Db.	63—65	..	..
150,000	10	Mar. 19	6	6	San Paulo 6 p.c. Pref.	7½—8½	..	8—8½
125,000	50	July 1	5	5	Do. 5 p.c. Red. Deb.	42—45	..	..
270,000	Stk.	Mar. 19	5½	5½	Sheffield A	104—106s	..	..
419,968	,,	,,	5½	5½	Do. B	104—106s	..	..
1,047,000	,,	,,	5½	5½	Do. C	104—106s	..	..
90,000	10	June 11	6	4	South African	7—9	..	..
6,609,895	Stk.	Aug. 13	6½	5	South Met. Ord.	90—92*	..	90½—91½
1,895,445	,,	July 9	3	3	Do. 3 p.c. Deb.	57—60	..	58½
734,000	,,	Mar. 5	6½	6½	Do. 6½ p.c. Red. Deb.	102½—104½	..	..
91,500	,,	Aug. 13	8½	8½	South Shields Con.	132—133d*	..	..
1,187,795	,,	July 21	6½	6½	South Suburban Ord. 5 p.c.	92—97	..	95—96
368,837	,,	June 25	5	5	Do. 5 p.c. Deb.	95—98	..	97
647,740	,,	May 7	5	5	South'mpt'n Ord. 5 p.c. max.	80—83	..	81½—82
121,275	,,	June 25	4	4	Do. 4 p.c. Deb.	70—73	..	..
250,000	,,	Mar. 5	7	7	Swansea 7 p.c. Red. Pref.	102—104	..	..
200,000	,,	June 25	6½	6½	Do. 6½ p.c. Red. Deb.	100—102	..	101
120,000	,,	July 23	8	7½	Tottenham District A 5 p.c.	113—116	..	..
882,275	,,	,,	6½	5½	Do. B 3½ p.c.	87—92	..	87
150,000	,,	July 9	—	28/4	Do. 5½ p.c. Pref.	103—105	..	..
181,255	,,	June 11	4	4	Do. 4 p.c. Deb.	76—79	..	..
258,251	,,	Mar. 19	5	5	Tynemouth Con. and New	74—76d	..	..
197,294	,,	Feb. 19	6½	6½	Uxbridge, Maidenhead, & Wycombe 5 p.c..	95—100	..	..
88,330	,,	,,	5	5	Do. 5 p.c. pref.	95—100	..	..
91,800	,,	,,	—	6½	Do. 5 p.c. Maidenh'd	90—95	..	92½—93
					Wandsworth, Wimbledon, and Epsom—			
30,000	,,	July 9	9½	8½	Wandsworth A 5 p.c.	125—130	..	..
855,636	,,	,,	7½	7	Do. B 3½ p.c.	107—112	..	..
392,955	,,	,,	6/9/6	5/19/0	Do. C and New	93—96	..	93
352,000	,,	,,	7⅝	6½	Wimbledon 5 p.c.	102—105	..	..
98,000	,,	,,	7⅝	7½	Epsom 5 p.c.	109—112	..	..
88,416	,,	June 25	3	3	5 p.c. Deb.	56—59	..	..

Quotations at :—*a*,—Bristol, *b*,—Liverpool, *c*,—Nottingham, *d*,—Newcastle, *s*,—Sheffield. * Ex. div.

Business was normal in the Gas Market. About the usual number of transactions were recorded, but it will be seen that there were no changes of any importance in the quotations. Rumours are rife that there is increased dissatisfaction with the working of the Gas Regulation Act, and it is expected that some movement will be made before the end of the year. The uncertainty of tenure, which has been evidenced by the revision of the standard prices, is the principal grievance. This is particularly noticeable in the Gas Light and Commercial 4 p.c. stocks. Before the war the stocks stood at about 105. Prior to the revision of the standard prices (December, 1923) the market prices were well up to the nineties, whereas at the present time the stocks can be acquired at about 80.

The following transactions were recorded during the week:

On Monday, Aldershot 4 p.c. preference 71, 71½ *ex* div., Bombay 18s. 3d., Bournemouth 4 p.c. debenture 78½, Cape Town 7½, 4½ p.c. preference 6, Commercial 4 p.c. 80, 3½ p.c. 80, Continental Union 7 p.c. preference 90, European 6⅝, 6⅞, 6 3/32, 7 1/16, Gas Light and Coke 80½ *ex* div., 4 p.c. preference 77⅝ *ex* div., 3 p.c. debenture 59½, 60½, 60¼, 60⅜, Imperial Continental 143, 144, Liverpool 7 p.c. preference 104½, 105, Montevideo 66½, Primitiva 4 p.c. 1st debentures 79½, 79¾, San Paulo 6 p.c. preference 8, 8⅛, South Metropolitan 91½ *ex* div., South Suburban 96, Swansea 6½ p.c. debenture 101, Tottenham "B" 87. Supplementary prices, Tunbridge Wells 4½ p.c. debenture 77½.

On Tuesday, Alliance and Dublin 63⅜, Bournemouth 6 p.c. preference 11 15/16, 11⅞, Brentford "A" 95½, 4 p.c. debenture 80, Commercial 3½ p.c. 80, 3 p.c. debenture 57, European 7, 7 3/32, Gas Light and Coke 80, 80¼, 80⅜ *ex* div., 4 p.c. preference 77½ *ex* div., 3 p.c. debenture 60⅛, Hastings and St. Leonards 5 p.c. 93½, 94⅜, 3½ p.c. 73½, Liverpool 7 p.c. preference 105½, Montevideo 67½, Ottoman 3s. 9d., Primitiva 9s. 3d., 9s. 4½d., South Metropolitan 91 *ex* div., 3 p.c. debenture 58½, South Suburban 5 p.c. 95, Tottenham "B" 87. Supplementary prices, Wandsworth 3½ p.c. New 93.

On Wednesday, Commercial 4 p.c. 81, Croydon sliding-scale 97, 97½ *ex* div., Gas Light and Coke 80, 80¼, 80½, 80¾, 81 *ex* div., 3½ p.c. maximum 61⅞ *ex* div., Imperial Continental 145½, 146, Primitiva 9s. 3d., 9s. 3⅜d., 9s. 4½d., South Metropolitan 90¾ *ex* div., Tuscan 6 p.c. debentures 65, Uxbridge (Maidenhead stock) 92½, 93. Supplementary prices, Cambridge University and Town 5 p.c. debenture 95⅜, 95⅞, Metropolitan (of Melbourne) 81 1/16, 81 1/8.

On Thursday, Alliance and Dublin 64⅞, Bombay 19s. 1½d., 19s. 3d., Bournemouth "B" £12 6s. 9d., Brentford "A" 93, British 109, Continental Union 39, European 7, Gas Light and Coke 80, 80¼, 80⅛, 81 *ex* div., Imperial Continental 146, Montevideo 67, Primitiva 9s. 3d., 4 p.c. 1st debentures 79½, 80, South Suburban 5 p.c. debenture 97, Southampton 5 p.c. maximum 81½, 82.

On Friday, Commercial 4 p.c. 80, 82, 3½ p.c. 80, European 7½, Gas Light and Coke 80½, 80¼, 80⅜, 80⅝ *ex* div., 3½ p.c. maximum 61⅞ *ex* div., Hastings 3½ p.c. 75½, 76, Imperial Continental 145, 150, Primitiva 9s., 9s. 1½d., South Metropolitan 91, 91⅜ *ex* div.

There were abundant supplies of loanable credit in Lombard Street, and at the close of business on Friday balances were offered at as low as 2⅜ p.c. Treasury Bills were allotted at £3 15s. 2·91d. p.c., a further fall of nearly 3s. p.c. In spite of these conditions, however, discount rates maintained a fairly steady appearance.

Among the Foreign Exchanges sterling continued steady; the New York rate remaining within the narrow range of 1/16, closing at 4·85 1/16. Both French and Belgian francs improved slightly, the quotations closing at 103.50 and 107.05 respectively. The Italian lire also appreciated to 133⅛.

No gold movements were reported, and the price for cash remained at 84s. 11½d. per oz. Silver closed at 32 5/16d. per oz.

The Bank Rate is 4½ p.c., to which it was reduced from 5 p.c. on Aug. 6. Bankers' deposit rates are 2½ p.c. The deposit rates of the discount houses are 2½ p.c. at call and 2¾ p.c. at notice.

Gas Prices at Widnes.—At a recent meeting of the Widnes Town Council, the Gas Committee announced an increase of 6d. per 1000 c.ft. in the price of gas, making a total charge of 2s. 6d. per 1000 c.ft. for ordinary consumers.

Glossop Gas Company.—For the half-year ended June 30 the total receipts of the Company amounted to £12,662, and the expenditure to £10,560. To the net profit of £2101 is added £5453 brought in; and maximum dividends on all classes of shares are recommended.

Perth Gas Price Increase.—The price of gas in Perth is to be increased by 1·1d. per therm (or 5d. per 1000 c.ft.), in consequence of the reduced returns from residual products. Bailie Hunter (the Convener of the Gas Committee) said it was hoped that the increase would be only temporary. The total revenue for the past financial year was £84,080.

Charge for Prepaid Gas at Swadlincote.—At a meeting of the Swadlincote Urban Council last week the Lighting Committee recommended the Council to make application to the Board of Trade for an Order authorizing the Council to make an additional charge of 1d. per therm for gas supplied through prepayment meters, and 3d. per therm in the case of free fittings, over and above the maximum prices mentioned in the Swadlincote District Gas (Charges) Order.

Maidstone Gas Company.—In their report for the year ended June 30 the Directors state that the accounts show, after providing for all fixed charges (including £2000 depreciation for stoves and fittings and £1831 for renewal fund), an available balance of £20,370. They recommend a dividend at the rate of 8½ p.ct. for the year, in respect of which an interim dividend at the rate of 4 p.ct. has already been paid. The sum of £2487 has been transferred to the reserve fund. The sales of gas again show a gratifying increase.

Glasgow Chemical Works.—Mr. James Macleod, Manager of the Glasgow Corporation Chemical Works, in his sixth annual report, for the year ended May 31 last, states that the principal items of new plant added are of an experimental character. They are a Woodall-Duckham still, and a Foster heater, of the Power Speciality Company, installed at Dalmarnock. Valuable information is expected to be gained from these plants. Much work has been done on vertical retort pitch, which remains a source of trouble to this department, as elsewhere, but so far without satisfactory result. The new methods of distillation being experimented with at Dalmarnock will lead, however, to a greatly reduced yield of pitch, which will tend to minimize the problem. Further work has been carried out on high-boiling tar acids, and improved working results are expected. After paying all working expenses, &c., and £25,989 for rates, taxes, and interest on the book value of the plant, the net revenue is £193,407.

Wolverhampton Gas Company.—The Company have declared dividends for the half-year ended June last at the rate of 11 p.ct. per annum on the 10 p.ct. standard consolidated stock, and 7 p.ct. per annum on the 6 p.ct. standard new ordinary stocks. Similar distributions were made a year ago.

The Kington Urban Council have accepted the tender of the local Gas Company, of £2 2s. 3d. per lamp, for street lighting from the second Saturday in September to March 31, 1926.

A lightning municipal strike, apparently based upon cost of living in relation to rates of pay, was carried out in Cologne on Tuesday morning of last week. The branches remaining unaffected were the fire brigade, water, and electricity. Gas was available only from mid-day to 1 o'clock.

The Rossendale Union Gas Company have declared a profit for the half-year of £5161. A dividend of 10 p.ct. will be paid on the original new ordinary and preferred ordinary shares; 7½ p.ct. on the 1876 Act shares; and 7 p.ct. on the Amendment Act and New Amendment Act shares.

At the half-yearly meeting of the Fleetwood Gas Company on Aug. 19, Mr. William Rogerson (Managing Director) presiding, the Directors' report showed gross profits of £2157, reduced by loan interest to £1733. Dividends were declared of: 7½ p.ct. per annum on the preference stock, and 6½ p.ct. on the ordinary stock, both less tax. After reserving £93 for reduction in gas prices, the balance of £162 was carried forward.

In connection with the scheme of the Automobile Association to illuminate dangerous cross-roads at night by lighted signs, one is to be placed at Oakmere, on the Warrington-Tarporley and Manchester-Chester roads. The sign will be 24 ft. high, and the illuminated arms are to be 6 ft. long, and are to be lighted by gas from dusk to dawn by a system of flood lighting so arranged that every arm will be clearly lighted. A similar signpost is to be put up at Gallows Corner, on the Southend road.

A tragedy due to a gas stove was not fully cleared up at the inquest on Thomas Lewis, a Lisburn man, who was found gassed at his work on Sunday morning the 16th inst., at the Sunderland Forge Company, Belfast Harbour. Deceased, who was a night watchman, was found lying dead on a table in the works dining-room. There was a strong smell of gas. The gas at a stove in a corner of the room was turned on, but all the jets were lighted. The factory inspector said that if a gas stove was left lighted in a room all night, the fumes would suffocate anyone. A gas inspector had examined the stove afterwards, and found it to be in perfect working order. The Coroner said there was no question of suicide in the case, and he recorded a verdict of "Accidental death."

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